ANNUAL REPORT

2017-2018

Indian Statistical Institute

PRESIDENT OF THE INSTITUTE, CHAIRMAN AND OTHER MEMBERS OF THE COUNCIL AS ON MARCH 31, 2018

President: Dr. Vijay Kelkar, Padma Vibhushan

1. Chairman: Prof. Goverdhan Mehta, FNA, FRS, Dr. Kallam Anji Reddy Chair School of Chemistry, University of Hyderabad, Central University, Gachibowli, Hyderabad - 500 046, Telangana.
2. Director: Prof. Sanghamitra Bandyopadhyay.

Representatives of the Government of India

3. Shri Surendra Nath Tripathi, Additional Secretary and Financial Advisor, Govt. of India, Ministry of Statistics and Programme Implementation, New Delhi.
4. Shri M.V.S. Ranganadham, DG (ES), Govt. of India, Ministry of Statistics and Programme Implementation, New Delhi.
5. Shri Pramod Kumar Das, Additional Secretary, Govt. of India, Ministry of Finance, Department of Expenditure, New Delhi.
6. Dr. Praveer Asthana, Adviser/Scientist-G, Head (AI and Mega Science Divisions), Govt. of India, Ministry of Science and Technology, New Delhi.
7. Dr. M.D. Patra, Executive Director, Reserve Bank of India, Mumbai.
8. Shri R. Subrahmanyam, Additional Secretary (T), Govt. of India, Ministry of Human Resource Development, New Delhi.

Representative of the ICSSR

9. Dr. V.K. Malhotra, Member-Secretary, Indian Council of Social Science Research, New Delhi.

Representatives of the INSA

10. Dr. Manindra Agrawal, Indian Institute of Technology, Kanpur.
11. Prof. B.L.S. Prakasa Rao, Ph. D, FNA, FASc, FNASc., FAPAS, Former Director ISI, Ramanujan Chair Prof., CR Rao Advance Institute of Mathematics, Statistics and Computer Science, Hyderabad.
12. Dr. Baldev Raj, President, PSG Institutions, Tamil Nadu.
13. Prof. Yadati Narahari, Department of Computer Science and Automation, Indian Institute of Science, Bangalore.

Representative of the NITI Aayog/ Planning Commission

14. Ms. Anna Roy, Adviser (DM&A), Govt. of India, NITI Aayog, New Delhi.

Representative of the University Grants Commission

15. Prof. Debasis Kundu, Department of Mathematics, Indian Institute of Technology, Kanpur.

Scientists co-opted by the Council

16. Prof. Rohini M. Godbole, FNA, Centre for High Energy Physics, Indian Institute of Science, Bangalore.
17. Prof. Mihir K Chaudhuri, Vice-Chancellor, Tezpur University, Assam.

Elected representatives of the Institute members not employed in the Institute

18. Prof. Shibdas Bandyopadhyay, Kolkata.
19. Prof. Atis Kr. Dasgupta, Kolkata.
20. Dr. I.K. Ravichandra Rao, Bangalore.

Elected representatives of the employees of the Institute

21. Dr. Partha Pratim Mohanta, Representative of the Scientific Workers.
22. Shri Gouri Sankar Acharya, Representative of the Non-scientific Workers.

Officers of the Institute

23. Prof. Arup Bose, Professor-in-Charge, Theoretical Statistics and Mathematics Division.
24. Prof. Ayanendranath Basu, Professor-in-Charge, Applied Statistics Division.
25. Prof. Arunava Sen, Professor-in-Charge, Social Sciences Division.
26. Dr. Tapan Chakraborty, Professor-in-Charge, Physics and Earth Sciences Division.
27. Prof. Pabitra Banik, Professor-in-Charge, Biological Sciences Division.
28. Prof. Susmita Sur-Kolay, Professor-in-Charge, Computer and Communication Sciences Division.
29. Shri Somnath Ray, Head, SQC & OR Division.
30. Prof. Abhay G. Bhatt, Head, Delhi Centre.
31. Prof. T.S.S.R.K. Rao, Head, Bangalore Centre.
32. Dr. D. Sampangi Raman, Acting Head, Chennai Centre.
33. Dr. Amita Pal, Dean of Studies.

Non-Member Secretary

Prof. Barun Mukhopadhyay, Chief Executive (Administration & Finance).

INDIAN STATISTICAL INSTITUTE

Annual Report

April 2017 – March 2018

203 Barrackpore Trunk Road
Kolkata – 700 108
(http://www.isical.ac.in)

INDIAN STATISTICAL INSTITUTE
EIGHTY SIXTH ANNUAL REPORT
April 2017 – March 2018

CONTENTS

Director's Report

I am delighted to present before you the Annual Report 2017-18 of the Indian Statistical Institute. This Institute was established by P.C. Mahalanobis in 1931 in Kolkata. It has now grown into a unique institution of higher learning, and is spread over several cities of the country. As in the past, the Institute continues its glorious tradition of disseminating knowledge in Statistics, Mathematics, Computer Science, Quantitative Economics and related subjects. The year 2017-18 saw the Institute continue to flourish under the able leadership and guidance of the ISI President Dr. Vijay Kelkar and the Chairman of the ISI Council, Professor Goverdhan Mehta.

The Institute conducted its 52nd Convocation in January 2018. The Institute was happy to have Nobel Laureate Professor David J. Gross, Chancellor's Chair Professor of Theoretical Physics, University of California, Santa Barbara, USA as the Chief Guest and Professor S.R.S. Varadhan, Padma Bhushan and winner of the Abel Prize, Courant Institute of Mathematical Sciences, New York University, USA as the Special Guest.

The year 2017-2018 marked the 125th birth anniversary year of P.C. Mahalanobis and was celebrated in a befitting manner through a series of academic programs in Kolkata and the different Centres. The year-long celebrations was inaugurated by the then Hon'ble President of India, Shri Pranab Mukherjee, on June 29, 2017. A few special issues of journals have been envisaged, including those of *Sankhya,* the journal of Statistics started by Mahalanobis. The Institute hosted a number of distinguished visitors who delivered public talks and seminars. Professor Ada Yonath, Nobel Laureate in Chemistry, visited the Institute on November 29, 2017 and delivered a public lecture titled "From Basic Science to Next Generation Medicine". The other visitors include Prof. Vijay Raghavan, Secretary, Department of Biotechnology and now the Principal Scientific Advisor to the Government of India, Prof. M.S. Raghunathan, Padma Bhushan awardee, IIT Bombay, Dr. R.B. Barman, Chairman, National Statistical Commission, Prof. Robert Faff, University of Queensland, Australia, Profs. Marc and Francine Diener, University of Nice, France, Prof. Mukul Majumdar, Cornell University, USA, Profs. Stephen Stigler and Robert Rosner, University of Chicago, USA, and Prof. Bani Mallick, Texas A & M University, USA. The twelfth meeting of the Lectures on Probability and Stochastic Processes, popularly known as LPS, was concluded at ISI Kolkata with the main speakers being Prof. Arvind Ayyer, Indian Institute of Science and Prof. Nathanaël Berestycki, University of Cambridge. The Institute for the first time invited two speakers, Prof. Blaz Zupan from University of Ljubljana, Slovenia and Prof. Nicola Santoro from Carleton University, Canada, under the Global Initiative of Academic Networks (GIAN) program of the Government of India. One of the key conferences of PCM 125 celebration, the International Conference in Statistics and Probability was successfully concluded with the active involvement of several of my colleagues, plenary talks by Prof. Regina Liu, Rutgers University and Prof. Christian Robire, Universite Paris-Dauphine and participation from around the globe. On December 18th, 2017, we celebrated the Foundation Day of the Institute with Prof. Bikash Sinha, former Director of the Saha Institute of Nuclear Physics and Variable Energy Cyclotron Centre, dwelling upon his reminiscences of his personal interactions with P.C. Mahalanobis and S.N. Bose. A short documentary on S.N. Bose, President of the Institute from 1967 to 1974, by Shila Dutta was also screened. The 125th Birth Anniversary of JBS Haldane was celebrated on November 6, 2017 with lectures by Prof. Vidyanand Nanjundiah and Science Communicator Pallava Bagla. Besides these, the Institute hosted many more visitors.

I am delighted to announce that as in previous years, a large number of honors and awards have been bestowed upon the scientists and students of the Institute during the past year. I mention some of these here. Ritabrata Munshi has been awarded the Infosys Prize 2017 in Mathematics. He has also been appointed Chief Editor of the Journal of the Ramanujan Mathematical Society in 2017. Sanghamitra Bandyopadhyay, has been awarded the Infosys Prize 2017 in Engineering and Computer Science, and also been selected for the TWAS Prize in Engineering Sciences 2018. Arunava Sen has been selected for the TWAS-Siwei Cheng Prize in Economic Sciences in 2018, Debasis Misra has won the prestigious Social Choice and Welfare Prize for 2018, the first time an Indian has won this prize. D. Yogeshwaran has been awarded INSA Young Scientist award 2017 and Debdulal Dutta Roy has received the Innovative Scientist Award from the Indian Academy of

Health Psychology. Siva Athreya has been invited to Chair the 10th World Congress in Probability and Statistics to be held in Seoul in 2020, a rare honor. Nikhil Pal has been elected President of the Computational Intelligence Society of the IEEE and offered Honorary Professor of University of Petroleum China, while V.K. Ramachandran was selected the Vice Chairman of Kerala State Planning Board. Chetan Ghate continues to serve as a member of the Monetary Policy Committee of the Reserve Bank of India that is entrusted with the task of fixing the benchmark policy interest rate to contain inflation within a specified target level. Former Director and currently Raja Ramanna Fellow at the Institute, Sankar K. Pal, has been conferred the Jawaharlal Nehru Birth Centenary Lecture Award by Indian National Science Academy. Our young colleague Sushmita Ruj has received an academic grant from Cisco Systems Inc., USA. Discovery of Shringasaurus, a New Horned Reptile of the Middle Triassic Age, has been a major breakthrough by Saswati Bandyopadhyay, our colleague from the Geological Studies Unit, and her team. This has attracted major media attention. The Institute is proud of them.

The regular academic degree programs of the Institute are going strong as usual. The post graduate diploma in statistical methods and applications conducted in the North-East Center of the Institute in Tezpur has now been opened up for students from across the country, with half of the seats being reserved for those domiciled in the North East. The branch in Giridih saw its first Six Sigma program conducted there under the guidance of colleagues from SQC&OR division. The first batch of students of the two-year Post Graduate Diploma in Business Analytics course, conducted jointly with the Indian Institute of Management Calcutta and Indian Institute of Technology, Kharagpur, have graduated in 2017, and have been very well placed. The Statistical Training Diploma, serving officials and students from different countries, is running successfully in ISEC.

The Cell for collaboration with academia, industry and R&D labs has been very active in interacting with the industry and academia from within and outside the country to set up collaborative work. Memorandum of Understandings (MOUs) have been signed/ extended between ISI and several other organizations including Pricewaterhouse Coopers, Wipro Ltd., AXISCADES, Capital One, Dhirubhai Ambani Institute for Information Technology, EfD Secretariat at Univ. of Gothenberg, GE India Industrial Pvt. Ltd., Tata Consultancy Services and many others. The Institute continues to undertake a large number of externally funded projects as part of its academic activities. The major funding agencies of the projects are Government of India, Government of West Bengal, DST, DGCIS, DAE, DBT, RBI, NITI Aayog, UGC, Metro Rail, Kolkata, Ministry of Tourism, IBM (USA), Intel Corporation, Samsung (Korea), US Army, London School of Economics, International Growth Centre and European Union Commission. A contract has been signed with five ordnance factories to develop systems to control the quality of weapons and ammunition being manufactured by them for the Indian armed forces. The International Passenger Survey funded by the Ministry of Tourism and led by the Institute scientists has concluded successfully. The Institute is a regular member of the square kilometer array (SKA) India consortium, an international initiative to build the world's largest telescope. The Centre for research on the Economics of Climate, Food, Energy and Environment (CECFEE), ISI Delhi is a part of the Environment for Development (EfD) Network and is receiving financial support for conducting environment related studies. Apart from these, the Institute is working very closely with the Government of India and various state governments for solving social problems and for improvement of services being offered by the government, in addition to conducting a large number of training programs for government officials.

I remain extremely grateful to Dr. Vijay Kelkar, Padma Vibhusan, President of the Institute and Prof. Goverdhan Mehta, Chairman of the Institute for providing valuable advice at various stages for the smooth functioning of the Institute. I am thankful to the Secretary, Ministry of Statistics and Programme Implementation and all other officials of the Ministry of Statistics and Programme Implementation, Government of India and Members of the Section 8(1) Committee for their active support. Finally, I thank all the scientific and non-scientific workers, students and well-wishers of the Institute for extending their cooperation for the all-round development of the Institute.

March 31, 2018 Sanghamitra Bandyopadhyay

Summary of Activities at a Glance

- **MoU with other Organisations (7 Nos.) :**

  (i) Airport Authority of India; (ii) University of Campinas, Brazil; (iii) Environment for Development, University of Gothenburg, Sweden; (iv) G.E. - Indian Industrial Pvt. Ltd; (v) Pricewaterhouse Coopers Private Limited; (vi) Quality Council of India; (vii) Wipro Limited.

- **Number of books published : 24**

- **Number of papers published : 562**

- **Number of Conferences, Workshops and Seminars held (Total – 477)** : 23 (Conference)
  140 (Workshop)
  314 (Seminar)

- **Prestigious Awards and Honours**

  - **Ritabrata Munshi (Stat-Math Unit, Kolkata) : Infosys Prize in Mathematical Sciences, 2017;**
  - **Neena Gupta (Stat-Math Unit, Kolkata) : B.M. Birla Science Prize in Mathematics, 2017;**
  - **D. Yogeshwaran (Stat-Math Unit, Bangalore) : IISA Young Scientist Award (2017);**
  - **Abhik Ghosh (ISRU, Kolkata) : Bose-Nandi Young Statistician Award (1st Place), 2017;**
  - **S. Bandyopadhyay (MIU, Kolkata) : (1) Distinguished Alumnus Award, IIT, Kharagpur, 2017; (2)National Leadership Award in Science and Technology (Young), Lakshmipat Singhania-IIM Lucknow, 2017; (3) Infosys Prize for Engineering and Computer Science, 2017; (4) J.C. Bose Fellowship, Engineering Sciences, DST, Govt. of India, 2017-22;**
  - **Rajat K. De (MIU, Kolkata) : Fulbright-Nehru Academic and Professional Excellence Fellowship (Flex Award), 2016- 2018;**
  - **Sushmita Mitra (MIU, Kolkata) : Fulbright-Nehru Academic and Professional Excellence Fellowship (Flex Award), 2018- 2019;**
  - **Debdulal Dutta Roy (PRU, Kolkata) : Innovative Scientist Award, Indian Academy of Health Psychology, 2017;**
  - **D. Mishra (EPU, Delhi) : Mahalanobis Memorial Award, The Indian Econometric Society, 2018.**

- **Regional Mathematical Olympiad (RMO), 2017**
  - **Date : 8 October, 2017**
  - **Participants : 471 (West Bengal), 623 (Karnataka)**
  - **Successful Students : 35 (West Bengal), 35 (Karnataka)**

- **Indian National Mathematical Olympiad (INMO), 2018**
  - **Date : 21 January, 2018**
  - **Participants : 70**

- **International Statistical Education Centre (ISEC)**
  - **Founded : 1950**
  - **Commencement date of 71st Term : 01 August, 2017**
  - **Number of Trainees : 25**
  - **Countries participated : Bhutan, Cambodia, Fiji, Mongolia, Myanmar, Nepal, Niger, South Africa, South Sudan, Sri Lanka, Tanzania.**

Journey of the Indian Statistical Institute (ISI)

1931-1960:

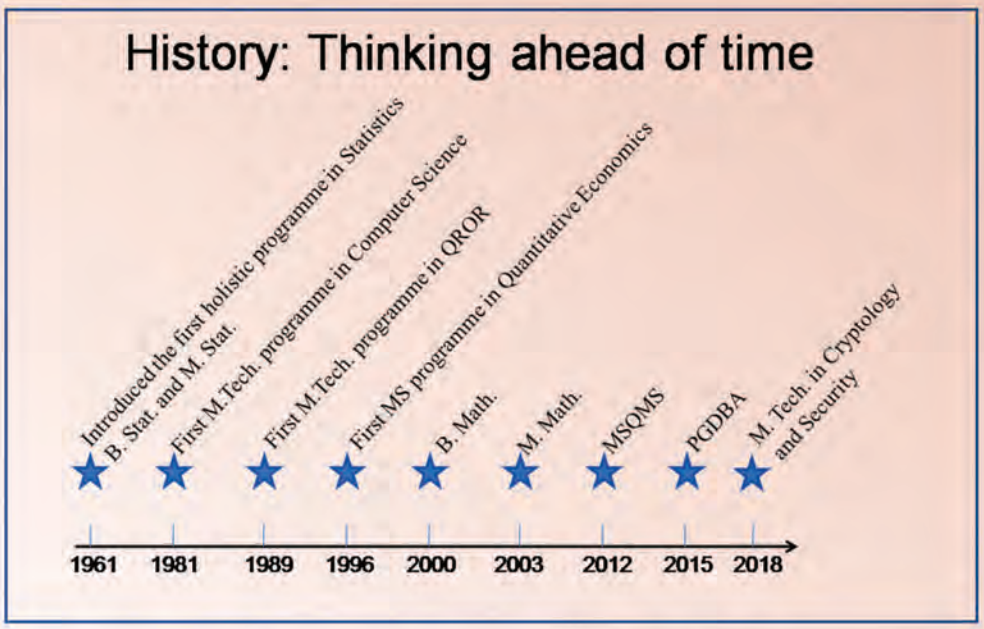
- P C Mahalanobis establishes ISI
- First international journal of Statistics in India, Sankhya, Foreword by Rabindranath Tagore
- Path breaking discoveries by ISI scientists:
  P.C. Mahalanobis - Mahalanobis distance, large scale sample survey method
  C.R. Rao – Cramer-Rao Bound, Rao-Blackwell Theorem
  R.C. Bose – BCH Error correcting codes
  S.R.S. Varadhan – theory of large deviations
  Bahadur Efficiency and Basu's Theorem in Statistics
- National Sample Survey conceived in ISI
- UNESCO empowered ISI to train statisticians of developing countries –International Statistical Education Centre (ISEC)
- Second Five-Year Plan drafted
- ISI designs the first analog computer in India
- First digital computer in India, HEC-2M, installed in ISI
- Dinosaur fossil, Barapasaurus tagorei, discovered by ISI geologists

1961-2010

- First digital computer (ISIJU-1) built
- Knowledge-based computing systems
- Precursor to modern AI and Data Analytics research in India
- Genomic Study, Bio informatics, Image Processing, Machine Learning
- Outreach program: North-East and Jharkhand
- Pioneering work in
  AI, Indian Language Technologies, Population Genomics, Comp. Genetics, Cryptology
  Introduction of Soft Computing Paradigm in India

2011 - till date

- Centre in the North-East of India established for development of the region
- Teaching and training in Official Statistics & Policy Research
- Seminal contributions in Game theory, Algebraic Geometry, Poverty and Inequality measures, Disease Genetics
- Discovery of Shringasaurus
- Centre for (i) Cryptology and Security (ii) Climate, Food, Energy and Environment
- Computational and experimental biology research; cancer, auto-immune and neuro-degenerative diseases



INDIAN STATISTICAL INSTITUTE

203 B. T. Road Kolkata 700108.

Founder
Professor Prasanta Chandra Mahalanobis

The Indian Statistical Institute, a premier and internationally acclaimed research, teaching and training institute, founded in 1931, is recognized as an institute of national importance by an act of Parliament in 1959.

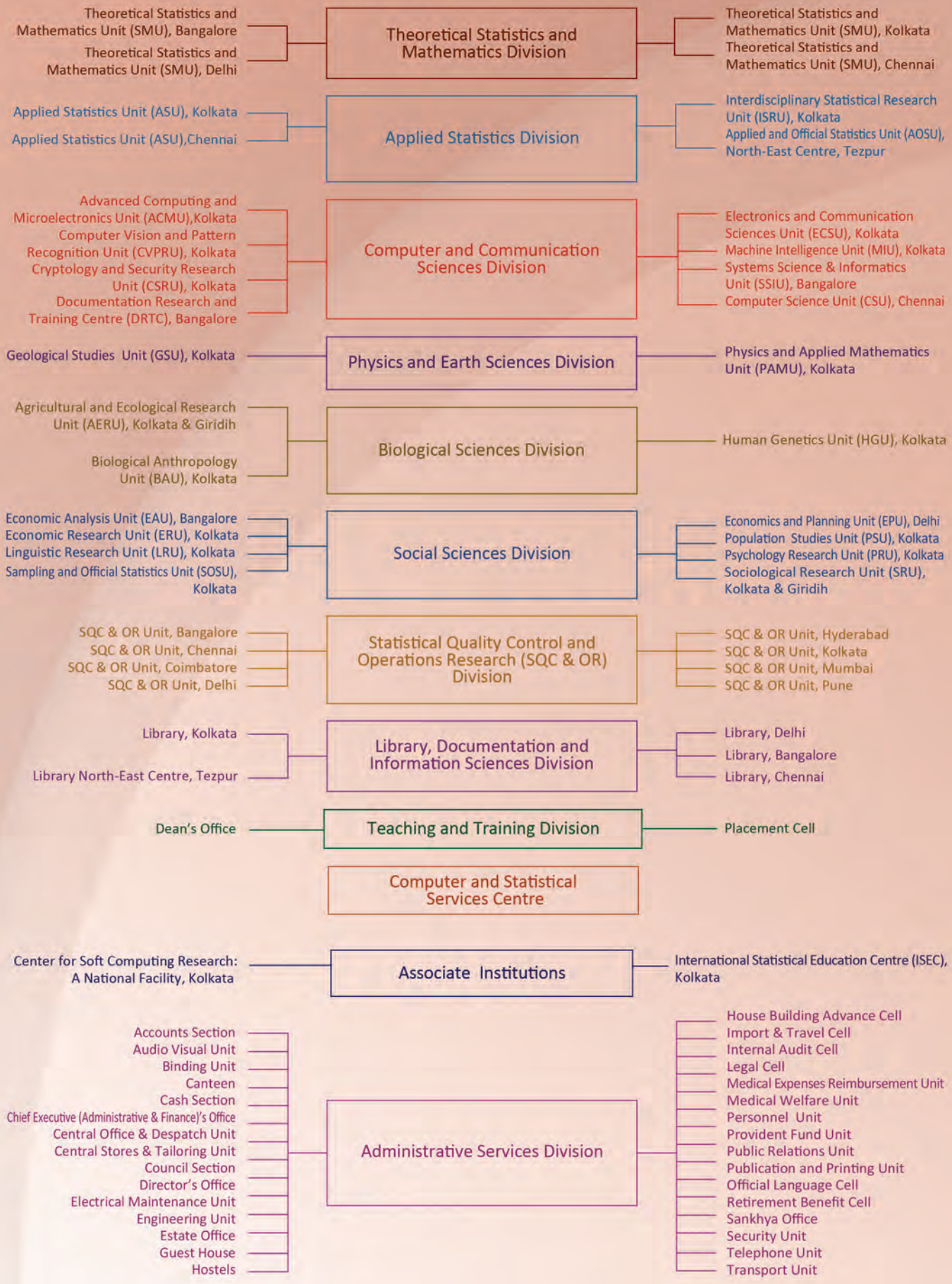
The Institute has distinguished faculty in statistics, mathematics, computer science, economics and other disciplines of natural and social sciences. Many of them are fellows of Indian National Science Academy, Indian Academy of Sciences, Indian National Academy of Engineering, National Academy of Sciences, India, Institute of Electrical & Electronics Engineers (IEEE) and many other distinguished scientific societies in India and abroad, and also recipients of prestigious awards like S.S. Bhatnagar Prize, Homi Bhaba Award etc.

The Institute offers -

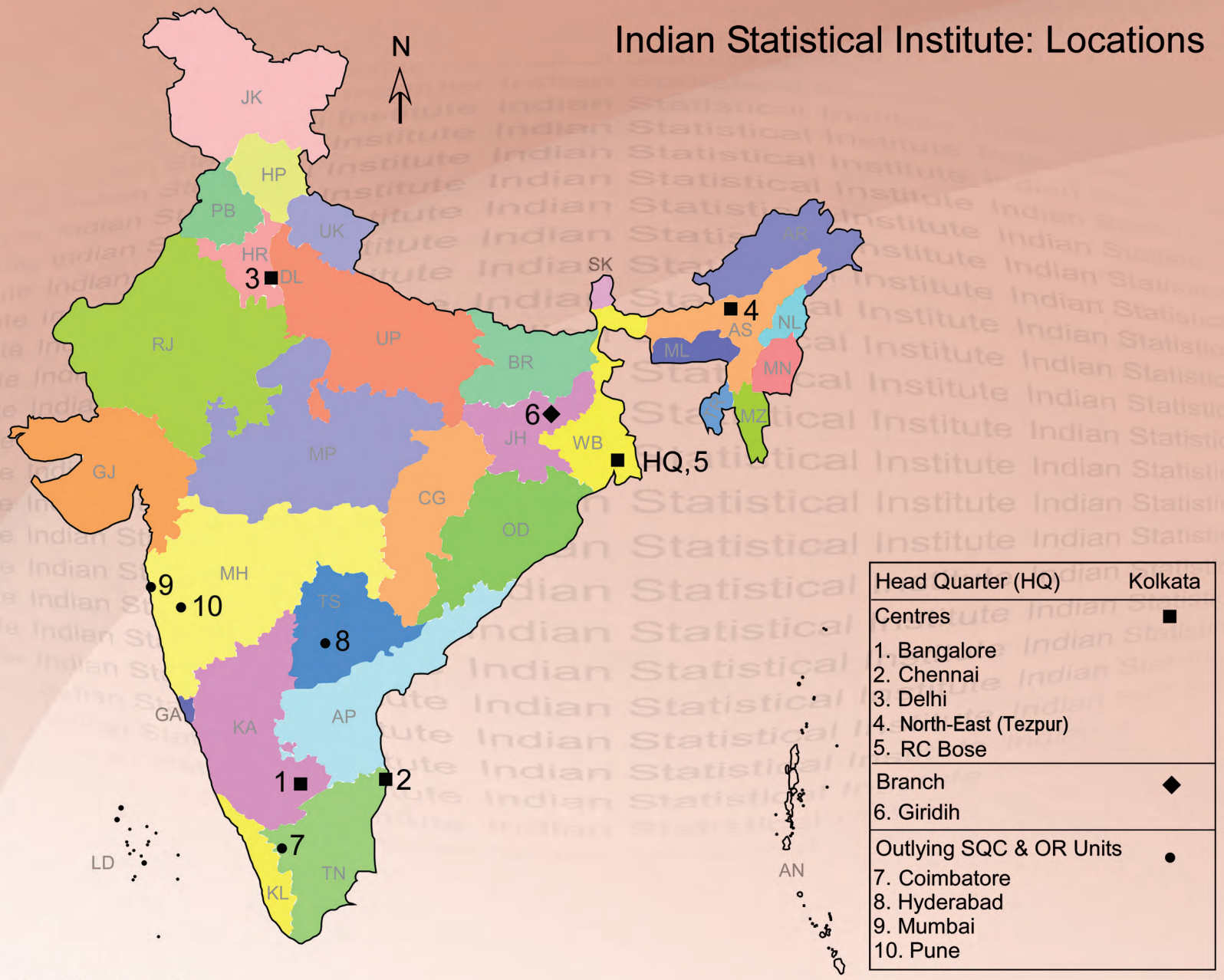
- B.Stat.(Hons.), B.Math.(Hons.), M.Stat., M.Math., M.S. in Quantitative Economics, M.S. in Quality Management Science, M.S. in Library and Information Science, M.Tech. in Computer Science, M.Tech. in Quality, Reliability and Operations Research
- Post Graduate Diploma in Statistical Methods and Analytics
- Post Graduate Diploma in Business Analytics (PGDBA) jointly with IIT Kharagpur and IIM Calcutta
- Post Graduate Diploma in Computer Applications (PGDCA)
- Junior/Senior Research Fellowships in several areas of natural and social sciences
- Statistical Training Diploma for students from developing countries (through International Statistical Education Centre)
- Ph.D. degrees in Statistics, Mathematics, Quantitative Economics, Computer Science and Quality, Reliability & Operations Research

The Institute also confers D.Sc. (Honoris Causa).

Organization of ISI by Divisions, Constituent Units and Associate Institutions



Indian Statistical Institute: Locations

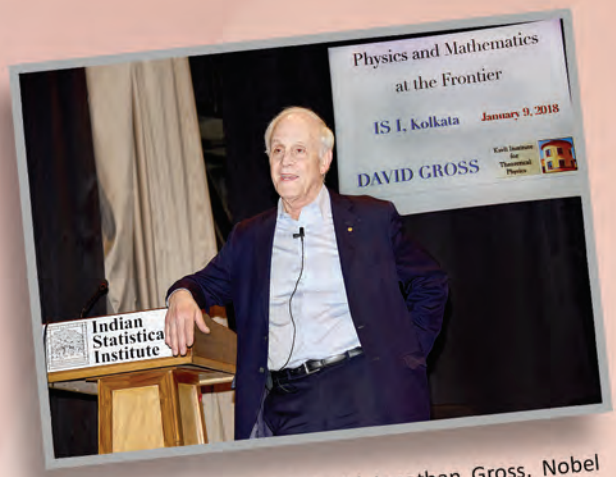


Head Quarter (HQ)	Kolkata
Centres	■
1. Bangalore 2. Chennai 3. Delhi 4. North-East (Tezpur) 5. RC Bose	
Branch	◆
6. Giridih	
Outlying SQC & OR Units	●
7. Coimbatore 8. Hyderabad 9. Mumbai 10. Pune	

Map: Not to the scale

"Silver Jubilee Workshop" organized by Machine Intelligence Unit, ISI, Kolkata on 23 March 2018

"P C Mahalanobis Memorial Lecture 2018", by Prof. Marc Hallin at ISI, Kolkata on 05 February 2018



Public Lecture by Prof. David Jonathan Gross, Nobel Laureate at ISI, Kolkata on 09 January 2018

Prof. S. R. Srinivasa Vardhan delivering a lecture on "The Polaron Measure" at ISI, Kolkata on 08 January 2018

A programme on "ISI-Networks" at ISI, Kolkata on 29 January 2018

Prof. Nigel Hughes delivering lecture at workshop on "Morphometrics & its Applications in Palaeontology" at ISI, Kolkata on 28 March 2018

Felicitation of Prof. Mukul Majumdar by Prof. S. Bandyopadhyay, Director, ISI for his lecture on "Sustainability & Uncertainty" at ISI, Kolkata on 20 November 2017

Workshop on "Computational Statistics" at ISI, Kolkata organized by Interdisciplinary Statistical Research Unit, ISI during 19-23 March 2018

Book release function of the publication "An Annotated Chronological History of Indian Statistical Institute, 1931-2006" organized by Reprography & Photography Unit, Library Division on 26 February 2018

Inauguration of International Conference on "Future of Libraries: From Promise to Practice" at DRTC Bangalore Centre, ISI during 15-17 November 2017

Celebration of 71st Independence Day at ISI, Kolkata

Training programme on "Career Interest Profile Similarity" organized by Psychology Research Unit on 11 August 2017

Training of Research Personnel of Doordarshan organized by ISI during 06-08 September 2017

7th International Conference on "Pattern Recognition & Machine Intelligence PReMI'17" organized by Machine Intelligence Unit, ISI during 04-08 December 2017

Inauguration of Hindi Training Programme "Praveen" & "Pragya" organized by ISI, Kolkata on 12 July 2017

Prof. Bimal K. Roy, former Director, ISI delivering lecture on "Blockchain-2017" at ISI on 29 November 2017

On the occasion of "Make in India" MoU, made between MEIKO Springs Company Ltd.-Japan with MSMF Unit M/S. Venkateswara Springs, organized by SQC & OR, ISI Coimbatore Centre

Inauguration of 8th Workshop on "Digital Pictorial Photography & Photography Exhibition" organized by Reprography & Photography Unit, Library Division on 15 January 2018

A lecture by Prof. Ashis Kumar Chakraborty, SQC & OR Unit, ISI Kolkata on 19 March 2018

Speakers and participants in Mini Symposium on "Big Data and Large Scale Computing" at ISI Delhi Centre on 27 December 2017

National seminar on "Land, Labour and Livelihood Focus and Development of Marginalized Communities and Social Groups" at ISI Giridih Branch during 30-31 January 2018

Participants of Certification programme for "Six Sigma Black Belt" organized by SQC & OR Unit, Hyderabad Centre during 11-16 December 2017

Training programme on "Statistical Techniques for Business Forecasting" organized by SQC & OR, ISI Mumbai Centre during 27-29 December 2017

"Hindi Karyashala" organized by ISI Kolkata on 16 June 2017

Programme on "Six Sigma Green Belt" organized by SQC & OR Division, ISI Kolkata on 10 July 2017

Training on "Government e Marketplace" organized by ISI Kolkata on 27 July 2017

Celebration of 69th Republic Day at ISI Kolkata

P C M Memorial Inter University Football Tournament organized by ISI Club during 23 October – 03 November 2017

Celebration of "World Yoga Day" at ISI Kolkata on 21 June 2017

66th Annual Sports at ISI Kolkata on 16 March 2018

Celebration of 125th Birth Anniversary of Prof. Prasanta Chandra Mahalanobis

Many Seminars, Lectures and Conferences were held at the Head Quarters at Kolkata and at various Centres, Branches, Outlying Units of Indian Statistical Institute during 2017-18, as a part of 125th Birth Anniversary Celebration of Prof. P.C. Mahalanobis.

Summary of Programmes at Kolkata

The yearlong celebration started on June 29, 2017 with garlanding the bust of Prof. P.C. Mahalanobis, on his 124th Birth Anniversary. Shri Pranab Mukherjee, the then Hon'ble President of India, inaugurated the ceremony. The Hon'ble Governor of West Bengal, the Hon'ble Minister of Statistics & Programme Implementation, Secretary MoS&PI, Dr. Vijay Kelkar, President of the Institute, Prof. Goverdhan Mehta, Chairman of the ISI Council were also present besides other dignitaries. The Governor of West Bengal released a Pictorial Album on P.C. Mahalanobis and the first copy was presented to Hon'ble President of India.

National Statistics Day was also celebrated in the Institute as a joint programme with Ministry of Statistics & Programme Implementation (MoS&PI), Govt. of India, New Delhi.

The Inaugural session was followed by a second session in Platinum Jubilee Auditorium of the Institute. The Chairman, National Statistical Commission, Secretary, MoS&PI and Guest speakers were present. This session included technical talks by Professors R.L. Brahmachary, K. Vijayraghavan (FRS) and M.S. Raghunathan (FRS), prize distribution for national essay writing competition and series of lectures on the theme of 11th Statistics Day.

The programmes organized throughout the year by the different Units in Kolkata are listed below.

Advanced Computing and Microelectronics Unit, Kolkata

Lecture Series organised:-

1. Saket Saurabh, Institute of Mathematical Science, Chennai (02.01.2018): Exact Algorithms via Monotone Local Search.

2. Pradip Bose, IBM, USA (12.01.2018): System Architectural Support for Mobile Cognition.

3. Janos Pach, EPFL Lausanne and Renyi Institute Budapest (16.01.2018): Order and disorder: A precarious balancing act.

4. Pavithra Pravakar, Kansas State University, (17.01.2018): Formal Verification of Robustness Properties of Hybrid Systems.

5. Janos Pach, EPFL Lausanne and Renyi Institute Budapest (19.01.2018): New Crossing Lemmas.

6. Anil Maheswari, Carleton University, Ottawa, Canada (06.02.2018): Faster algorithms for some optimization problems on collinear points.

7. Anusua Bhowmik, AMD Bangalore (12.12.2018): AMD's Ryzen Processor Microarchitecture.

8. Deepak D'Souza, IISc, Bangalore (20.02.2018): Horn-ICE Learning for Invariant Synthesis.

Celebration of 125th Birth Anniversary of Prof. PC Mahalanobis

9. Hans Van Ditmarsch, CNRS (French National Research Organization), LORIA, France (08.03.2018): Protocols and the Logic of Knowledge.

10. Robert Wille, Johannes Kepler University Linz, Austria, (28.03.2018): Quantum Computation: Prospects and Challenges.

Workshop organised:-

1. Workshop on "*Parallel Processing for Large networks*": ACMU, Kolkata, December 27-29, 2017.

Speakers:

1. Ananth Kalyanaraman (School of EECS, Washington State University, USA)

2. Mainak Chaudhuri (CSE, IIT, Kanpur)

Computer Vision and Pattern Recognition Unit

Workshop organised:-

1. 2nd International Workshop on "*Pattern Analysis and Applications*": CVPR, Kolkata, January 29-31, 2018.

Topics:-

- Pattern Recognition
- Machine Learning
- Medical Image Analysis
- Document Analysis
- Object Spotting and Tracking
- Data mining
- Biometrics
- Sensor Data Analysis
- Language Understanding

Invited Lectures:-

1. Probal Chaudhuri (Indian Statistical Institute): Biographical Memoirs - Life and Work of Prasanta Chandra Mahalanobis.

2. Partha Pratim Talukdar (Indian Institute of Science (IISc), Bangalore): Knowledge Graphs.

3. B.B. Chaudhuri (Indian Statistical Institute): Basics of Image Processing and Pattern Recognition.

4. Hishasi Ikeda (Hitachi Ltd., Japan): Artificial Intelligence in Social Innovation Business.

5. Probal Chaudhuri (Indian Statistical Institute): Unsupervised and Supervised Classification of High Dimensional Data.

6. A.R. Unnikrishnan (NVIDIA, South Asia): Role of GPU in High Performance Computing & Deep Learning.

7. Monojit Choudhury (Microsoft, Bangalore): Is language too deep to learn? Yes, even if not "literally".

8. Gernot A. Fink (Technische Universitat, Dortmund, Germany): Deep Attribute Learning.

9. Koichi Kise (Osaka Prefecture University, Japan): Quantified Reading and Learning for Sharing Experiences.

10. Jens Rittscher (University of Oxford, UK): Quantitative Methods for Cell and Tissue Imaging.

11. Bertrand Coüasnon (IRISA - INSA, France): DMOS: Fusion of Knowledge for Improving your Document Analysis System.

12. Fadoua Drira (University of Sfax, Tunisia): Variational and Deep Learning Methods for Document Image Processing.

Electronics and Communication Sciences Unit

Conference organised:-

9th International Conference on "*Advances in Pattern Recognition, 2017 (ICAPR-2017)*": ECSU, Kolkata in collaboration with SSIU, Bangalore and R.C. Bose Centre for Cryptology and Security, Kolkata, held at ISI, Bangalore, December 27-30, 2017.

Speakers:

1. Robert M. Haralick (Graduate Center, City University of New York, USA)

2. Sargur Srihari (University at Buffalo, The State University of New York, USA)

3. Edwin R Hancock (Department of Computer Science, University of York, UK)

4. Laurent Najman (Laboratoire d'Informatique Gaspard Monge, ESIEE Universite Paris-Est, France)

Cryptology and Security Research Unit, Kolkata

Workshop organised:-

Workshop on "*Application of Probability and Statistics in Cryptology*": CSRU, Kolkata, February 14-15, 2018.

Speakers:

1. Sugata Gangopadhyay (IIT Roorkee)

2. C. Pandu Rangan (IIT Madras)

3. Shashwat Raizada (REBI and Ex-Indian Navy)

Celebration of 125th Birth Anniversary of Prof. PC Mahalanobis

Economic Research Unit, Kolkata

Symposium organised:-

1. Symposium on "*Planning, Inequality and the Political Economy of Development in India*": ERU, Kolkata in collaboration with Asiatic Society, Kolkata, February 09, 2018.

Speakers:

1. Amiya Kumar Bagchi (Emeritus Professor, IDSK)
2. Asis Kumar Banerjee (Former Vice-Chancellor, University of Calcutta)
3. Raghab Chattopadhyay (Former Professor of Economics, IIM, Calcutta)
4. Pronab Sen (Country Director, IGC India Central and former Chief Statistician , GoI)

Chair:

- Dipankar Dasgupta (Former Professor, ISI)

Population Studies Unit, Kolkata

Workshop/ Training Programme organised:-

1. Workshop on "*Non-Social Cognition and Intelligence using WAIS-IV (NSCI)*": PSU, Kolkata, December 4-8, 2017.
2. Training Programme on "*R- Programming for Behavioural Data Examination*" (For Post-Graduate & Researchers): PSU, Kolkata, March 14-25, 2018.

Summary of Programmes at Delhi

The yearlong celebration started on June 29, 2017, by garlanding the bust of Prof. P.C. Mahalanobis, on his 124th Birth Anniversary. The next event was Tree Plantation by senior most workers of ISI, Delhi Centre. This was followed by welcome address by Head, Delhi Centre and speech by Prof. R.B. Bapat who was the chief guest.

In the evening, Academic Programmes were organized at the Auditorium, in which Prof. R.L. Karandikar, Director, Chennai Mathematical Institute and Dr. Arvind Subramanian, Chief Economic Adviser, Govt. of India were speakers.

Several special lectures/meetings were organized throughout the year in honour of Prof. P.C. Mahalanobis:

Lecture Series organised:-

1. Robert Faff, Director of Research, University of Queensland (21.08.2017): Pitching Research for Engagement and Impact.

2. Marc Diener, Laboratoire Jean Dieudonne, Nice, France (10.10.2017): Microcredit-Stochastic et statistical approaches for understanding and rating.

3. Francine Diener, Laboratoire Jean Dieudonne, Nice, France (11.10.2017): "How to fit a jump diffusion model to return prices?

4. Stephen Stigler, Distinguished Professor, University of Chicago, USA (08.12.2017): "Mahalanobis and Fisher: Mathematical Statistics as a Global Enterprise.

5. Bani Mallick, Texas A & M University and U.S. Fulbright-Nehru Distinguished Chair, National Institute of Biomedical Genomics, West Bengal (12.12.2017): Bayesian Gaussian Graphical Models and their extensions.

6. Dilip Mookherjee, Professor, Boston University, USA (09.03.2018): Communities, Networks and Development.

Symposium organised:-

1. Mini Symposium on "*Big Data and Large Scale Computing*": Delhi Centre, December 27, 2017.

2. International Symposium on "*Operations Research and Game Theory: Modelling and Computation*": Delhi Centre, January 9-11, 2018.

Summary of Programmes at Bangalore

The centre had yearlong celebration to commemorate 125th Birth Anniversary of Professor PC Mahalanobis. The main programmes consisted of series of lectures by distinguished visitors from various academic fields addressing the general audience. Units have also conducted special academic programmes to commemorate this. The details of Special Lectures are as hereunder:

Stat-Math Unit, Bangalore

Lecture Series organised:-

1. Mustansir Barma, TIFR Centre for Interdisciplinary Sciences – Hyderabad (23.02.2018): Away from the Average: The Physics of Fluctuations.

2. Siddartha Bhattacharya, TIFR, Mumbai (31.10.2017): Translational tilings of the plane.

3. C.P. Chandrasekhar, Center for Economic Studies and Planning JNU (23.01.2018): The contradictions of neoliberalism - Interpreting India's banking crisis.

4. Nandita Jayaraj, The Life of Science Project (10.10.2017): The invisible women of Indian science.

5. Anil Gupta, IIM, Ahmedabad and Honey Bee Network (07.11.2017): Modelling and research gaps in inclusive innovation research.

6. Madhav Gadgil, National Centre for Cell Science (16.01.2018): Use and abuse of knowledge.

7. Amman Madan, Azim Premji University, Bangalore (06.3.2018): Identity politics in school curricula: post-modernism and the problem of academic knowledge.

8. Sarang Sane, IIT, Madras (20.03.2018 & 22.03.2018): The Pfaffian of a matrix and unimodular rows & Specialization closed subsets; thick subcategories and Cohen-Macaulay rings.

9. Vijay B. Shenoy, IISc, Bangalore (03.10.2017 and 04.10.2017): Topology of Electronic Phases and The Tenfold Way to Amorphous Topological Insulators.

10. Ajay K. Sood, Indian National Science Academy, IISc, (27.03.2018): Exciting Physics Inspired by Nature: Flocking and Bacterial Heat Engine.

11. Mukund Thattai, National Centre for Biological Sciences, Bangalore (17.10.2017): Possible and Impossible Cells.

Documentation Research and Training Centre, Bangalore

1. H.K. Kaul, Director, DELNET: Library and Information Science Profession at the Crossroads: Challenges and Opportunities for a Great Future.

Systems Science and Informatics Unit, Bangalore

1. Upinder S. Bhalla, National Centre for Biological Sciences, Bangalore: Sequence Computation In the Brain Through Sub cellular Mechanisms.

Economic Analysis Unit, Bangalore

1. Sanjay Reddy, New School for Social Research, New York, USA (18.01.2018): Who gets what in the World? Insights from the Global Consumption and Income Project.

Summary of Programmes at Chennai

The 12th Statistics Day and the 125th Birth Anniversary celebration of Professor. P.C. Mahalanobis was organized in a grand manner at Chennai Centre.

Lecture Series organised:-

1. Marc Hallin, European Centre for Advanced Research in Economics and Statistics (ECARES), Belgium (09.02.2018): On Multivariate Distribution and Quantile Functions, Ranks and Signs: A measure transportation approach.

2. V. Swathi, Loyola College: Development of a Geriatric Home Assessment Toll.

3. Sreeraam, Loyola College: Resource Planning using Time Series Analytics.

Summary of Programmes at North-East Centre, Tezpur

The North-East Centre of ISI organized several events to commemorate the 125th birth year of Professor P. C. Mahalanobis. It was followed by visit to the site of construction of the permanent campus of the North-East Centre. The documentary on the life of Professor P. C. Mahalanobis and

rich legacy of ISI, 'The Taming of Chance' was screened. The following distinguished speakers presented lectures on the topics mentioned below during the two-day event.

Symposium organised:-

1. Conference and Workshop on *"Set Theoretic and Topological Methods in Model Theory":* September 7-12, 2017, ISI N-E Centre, Tezpur.

2. *"Inauguration of Photographic Exhibition*": at ISI N-E Centre, September 7, 2017, ISI, NE Centre, Tezpur.

3. Workshop on "*Special Training and Contact Programme* (for Final-Year Post–Graduate Students)": ISI, N-E Centre, Tezpur, December 18-29, 2017 and January 02-15 & 18-31, 2018.

4. Winter School on *"Mathematics for College Students of North-Eastern States":* January 16-20, 2018, ISI, N-E Centre, Tezpur.

5. *"Professor Prasanta Chandra Mahalanobis Memorial Quiz Competition"*: February 06, 2018, ISI, N-E Centre, Tezpur.

6. Workshop on *"Students' Meet with Eminent Academicians-2018 (SMEA-2018)*": ISI, N-E Centre, Tezpur, March 23-24, 2018.

Lecture Series organised:-

1. Partha Pratim Majumder (Distinguished Professor & Ex-Director, National Institute of Biomedical Genomics; Retired Professor, ISI Kolkata): (i) Prasanta Chandra Mahalanobis: A Firm Believer of Science and Rationality & (ii) Understanding Structure and Relationships of Indian Ethnic Groups: The Legacy of Prasanta Chandra Mahalanobis.

2. Sanghamitra Bandyopadhyay (Director, ISI): Introduction to Clustering.

3. Radha Binod Barman (Chairman, National Statistical Commission, GoI): Multi-Level Analysis for Productivity and Efficiency: Prospects and Challenges.

4. Arunava Sen (ISI, Delhi Centre): Engineering in Economics - An Introduction to Mechanism Design.

5. Ravindra Shripad Kulkarni (Distinguished Professor, Bhaskaracharya Pratishthana; Ex-Director, Harish-Chandra Research Institute): (i) Algorithmic Construction of Finite Representation of Solvable Graphs & (ii) Philosophy of Mathematics.

6. Probal Chaudhuri, ISI Kolkata: Shape of the Earth, Motion of the Planets, and the Method of Least Squares.

Summary of Programmes at Giridih

The Indian Statistical Institute Giridih celebrated 125th Birth Anniversary of Professor Prasanta Chandra Mahalanobis by organising several academic events during 2017-18.

Celebration of 125th Birth Anniversary of Prof. PC Mahalanobis

Stat-Math Unit, Kolkata

Conference organised:-

Conference on "*Growth Curve Model"*: Stat-Math Unit, Kolkata, held at Giridih, October 23-24, 2017.

Sociological Research Unit, Giridih

Conference organised:-

National Conference on "*Land, Labour and Livelihood: Focus on Development of Marginalized Communities and Social Groups*": SRU, Giridih, January 30-31, 2018.

Speakers:

1. Gurdeep Singh (IIT-ISM, Dhanbad & Former Vice Chancellor, Vinoba Bhave University, Hazaribagh).

2. Dipti Ranjan Sahu (Lucknow University & Present Secretary).

3. Vijoy Shankar Sahay (Indian Sociological Society, and Professor (emeritus).

Agricultural and Ecological Research Unit, Giridih

Symposium organised:-

1. National Symposium on "*Agricultural research under a changing climate in Eastern India*": AERU, Giridih, January 17-18, 2018.

Speakers:

1. Birendra Kumar Sinha (Former Union Secretary of Ministry of Rural Development, Govt. of India & Supreme Court Advocate).

2. Biswarup Mandal (Pro-Vice Chancellor of BCKV, Kalyani, West Bengal).

3. Partha Nath Mukherjee (JNU & Former Director of Tata Institute of Social Sciences).

Inaugural programme of National Celebration of 125th Birth Anniversary of Prof. Prasanta Chandra Mahalanobis on 29 June 2017

Dr. Vijay Kelkar, President, ISI at garlanding ceremony of 125th Birth Anniversary of Prof. Prasanta Chandra Mahalanobis on 29 June 2017

Prof. Ada Yonath, Nobel Laureate, delivering a public lecture at ISI, Kolkata on 29 November 2017

Felicitation of Prof. Robert Rosner by Prof. S. Bandyopadhyay, Director, ISI on 14 December 2017

Prof. S. Bandyopadhyay, Director, ISI felicitating Prof. Saitou Naruya, Japan at symposium organized by Biological Science Division on 07 November 2017

"Students' meet with eminent academicians – 2018" at ISI North-East Centre, Tezpur during 22-24 March 2018

Tezpur Students' meet with eminent academicians – 2018 at ISI North-East Centre, Tezpur during 12-24 March 2018

Prof. Bikas Sinha (Padma Bhushan), delivering public lecture on "Remembering S N Bose and P C Mahalanobis" at ISI on 18 December 2017

Training on "R-Programming for behavioral data examination for post-graduate students and researchers" organized by Psychology Research Unit, ISI, Kolkata during 14-15 March 2018

Prof. S. Bandyopadhyay, Director, ISI inaugurating the programme "Remembering J B S Haldane on his 125th Birthday" on 06 November 2017

Prof. S. Bandyopadhyay, Director, ISI delivering lecture on 02 January 2018

Workshop on "Statistical Methods and R-Programming for Biologists", organized by Agricultural & Ecological Research Unit, ISI during 07-13 March 2018

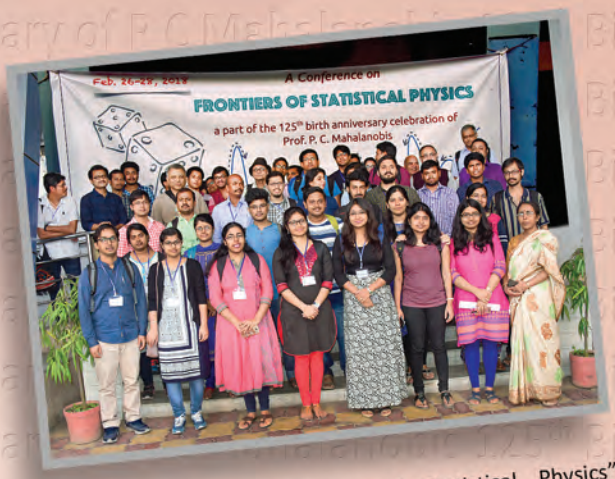
Dr. B Meenakumari, Chairperson NBA at a workshop on "Economic and Ecological Impacts of invasive Alien Species" on 21 February 2018

Symposium on "Life & Works of Prasanta Chandra Mahalanobis: Impacts on Modern India" on 17 January 2018

Conference on "Population and Development in Eastern and North Eastern Regions of India" organized by Population Studies Unit, ISI on 17 September 2017

"5th India Biodiversity Meet-2018" International Conference at ISI Kolkata, organized by Agricultural & Ecological Research Unit, ISI during 15-17 March 2018

Symposium on "Recent Trends in Operations Research and Data Science" organized by SQC & OR Unit, ISI, Kolkata on 19 December 2017



Conference on "Frontiers of Statistical Physics" organized by Physics & Applied Mathematics Unit, ISI Kolkata during 26-28 February 2018

Second session programme of "National Celebration of 125th Birth Anniversary of Prof. Prasanta Chandra Mahalanobis" on 29 June 2017

2nd International Workshop on "Pattern Analysis & Applications" organized by Computer Vision and Pattern Recognition Unit, ISI, Kolkata during 29-31 January 2018

RECENT CENTRES

A Brief Account of Academic Activities at North-East Centre of Tezpur, Assam

The North-East (N-E) Centre of the Institute was established at Tezpur, Assam on 23rd July, 2011. It was inaugurated by Shri Pranab Mukherjee, the then Finance Minister, Govt. of India and the then Chairman, Indian Statistical Institute Council.

The **Post-Graduate Diploma in Statistical Methods and Analytics (PGDSMA)** course has been running successfully at the N-E Centre. All successful students with First Division have been, as per the Memorandum of Agreement, absorbed by Tata Consultancy Services (TCS).

The research topics of this Centre include: Psychosocial work characteristics and health (mainly depression and work stress) with applications of advanced statistical methods e.g. mixed models, structural equation models, autoregressive models, multilevel models etc.; Understanding determinants of healthy life expectancy (involved in the EU-funded project, IDEAR with researchers from Sweden, Denmark, Finland, UK and France); A research project studies the implications for lexicographic preferences of behavioural traits of people which are naive. This study analyses two different classes of traits. This study is a theoretical one. Given the ubiquity of lexicographic preference in experimental studies, these projects can contribute to the understanding of lexicographic behaviour observed in experimental studies; Negative externalities due to private consumption are well studied issues in environmental economics, and especially its implications for market failure. A project is trying to understand the issue as a planner's problem. Findings reveal that it is possible to design institutions where people have incentive to tell the truth about their needs, such that outcomes of such institutions can avoid inefficiency; A research project provides an alternative explanation of standard dictatorial and ultimatum games based on outcomes instead of intrinsic normative concerns. It provides provide a theoretical foundation using a mechanism design approach. The main theoretical result is that in the Bayesian Nash Equilibrium of the game that we have designed, people leave money on the table; Change detection around Kaziranga National Park; Crop health monitoring around Tezpur; Applications of Deep Learning in Medical Imaging; Analysis of atmospheric particulate matter removal using satellite imagery derived vegetative cover; Retrieval of historic atmospheric Black Carbon concentration in the Arctic Region and North America; Profile analysis of polycyclic aromatic hydrocarbons (PAHs) in environmental matrices; Carbon foot-printing of the Indian tea industry; Morphological and chemical characterisation study of dust; Systematic review and Meta-analysis of RCTs on maternal and child nutrition; Meta-analysis combining parallel and cross-over randomized controlled trials to assess impact of fortified foods on serum levels of concentration among children & infants; Current nutritional status of under five year children in India: a retrospective study.

Five workshops and training programmes were organised by the N-E Centre during this year. This includes two which were organised by AOSU of the N-E Centre. The Centre also hosted three other workshops and training programmes, which were organised by different Units from the Headquarters. Three scientific papers were published in journals, two in conference proceedings, and one in an edited book. One book has been published. Four faculty members visited several national institutions and one institution abroad on scientific/academic assignments.

A Brief Account of Academic Activities at RC Bose Centre for Cryptology and Security, Kolkata

R.C. Bose Centre for Cryptology and Security is a new centre of the Indian Statistical Institute at Kolkata. It aims to promote interdisciplinary research in Mathematics, Computer Science and Statistics towards furtherance of teaching, research as well as training and development in Cryptology and

Cyber Security. The Centre acts as a hub for all cryptographic requirements, cutting-edge research activities and technology development in relevant fields, in order to create a critical mass of researchers and experts to fulfil the growing demand in the national and international arena. As in previous years, in 2017-18 the Centre has provided direction and advice to various wings of Armed Forces, DRDO, Police Organisations and Security Agencies. A new certificate course in Cryptology and Data Security has been started this year specially designed for defence personnel. A total of 13 officers from various defence services are enrolled in this years' course. Many externally funded projects funded by Samsung, NettApp Inc., Cisco Systems Inc. etc. were also carried out this year.

As part of capacity building at the national level, the Centre has provided dedicated research internship program in Cryptology and Security to senior undergraduate and fresh post-graduate students from premier institutions of the country. A two-month intensive training in Cryptology is given during summer every year where the interns are given some basic courses in all aspect of Cryptology and Security. Many workshops and training programs have also been conducted for the students of colleges in and around Kolkata. The R.C. Bose Centre is engaged in cutting-edge research in various aspects of Cryptography. The main focus areas of research are: Quantum Information and Quantum Cryptography, Symmetric Key Cryptanalysis, Steganography, Cloud Security, Blockchains, Hardware implementations, Internet of Things. The number of papers published/accepted in reputed international journals in this period is 14.

The Centre continues continue to collaborate with leading experts from many academic institutions from around the world and had several visitors during this period. The faculty members have also visited many institutions for collaborative work. The R.C. Bose Centre will continue to act as a national hub for cryptographic requirements, cutting-edge research activities and indigenous capacity building in all relevant fields of study.

A Brief Account of Academic Activities at Chennai Centre

Chennai Centre of Indian Statistical Institute was declared open by ***Shri Pranab Mukherjee*** the then Chairman of ISI Council and External Affairs Minister, Govt. of India on 26th July 2008. During the year 2011, a Post Graduate programme called M. Stat. was introduced. By 2012, several units like Applied Statistics Unit and Computer Science Unit were introduced besides the already functioning SQC & OR Unit. At present there are 12 faculty members belonging to these three units.

Initially Chennai Centre had offered M. Stat (Applications) in the year 2011 and from 2013 1st year of M. Stat (NB-Stream) was offered till 2017. All these students would then purse their 2nd year at ISI, Kolkata. Every year one or two students travel to Netherlands for doing their Internship at University of Groningen.

The research interest of faculty are Game Theory, Multi Objective Programming, Linear Complementarity Problems and its variants, Reliability, Statistical Finance, Harmonic mappings, Composition Operators, Quasiconformal and Special functions, Several complex variables, Semi definite Complementarity problems, Stochastic games, Bootstrap methods for High-dimensional Time Series, Cognitive models of strategic reasoning, Topological Quantum Computing, methods and materials, Development of quantum field theory for random and interacting systems etc.

The Centre is also engaged with various corporates on assignments related to Quality Management and Operations Research.

Our new campus at Karapakkam is being developed. Boundary wall work was over and the earth filling work is under progress. Chennai Centre along with scientists from HQ is also actively engaged with GoTN to carryout projects for the development of Tamil Nadu. Also faculty from this Center are involved with conduct of training for various department of GoTN.

A BRIEF HISTORY OF THE INSTITUTE

In the 1920's, Prasanta Chandra Mahalanobis, then a Professor at Presidency College, Calcutta conducted several studies employing statistical methods with results that vindicated his ideas about the efficacy and possibilities of the emerging science of Statistics. In a meeting on 17th December 1931 presided by Sir R.N. Mukherjee, the first President of the Institute, the Indian Statistical Institute (ISI) was formally established and Prasanta Chandra Mahalanobis was appointed the Honorary Secretary. The Indian Statistical Institute was registered on 28th April, 1932, as a non-government and non-profit distributing learned society under the Societies' Registration Act No. XXI of 1860. The Institute is now registered under the West Bengal Societies Registration Act XXVI of 1961, amended in 1964. It has the following objectives:

(i) To promote the study and dissemination of knowledge of Statistics, to develop statistical theory and methods, and their use in research and practical applications generally, with special reference to problems of planning for national development and social welfare;

(ii) To undertake research in various fields of natural and social sciences with a view to the mutual development of Statistics and these sciences;

(iii) To provide for, and undertake, the collection of information, investigations, projects, and operational research for purposes of planning and the improvement of efficiency of management and production.

(iv) To undertake any other ancillary activities in fulfillment of the objectives (i), (ii) and (iii).

The Institute started functioning initially from a room of the Presidency College with enduring support from a number of distinguished personalities and devoted scholars in Kolkata. Over the first two decades, which turned out to be a glorious chapter in the annals of Indian science and institution building, the ISI embarked upon a series of pioneering programmes involving the application of Statistics in search of solution of the urgent and live problems of the country. Such programmes included innovative projects on sample surveys of yield and land utilisation of crops, socio-economic after-effects of Bengal famine and problems of flood research. These innovations and methodological research have since become classics in Statistics. At the same time, the training of scientific personnel began to grow. This also encouraged high level research and brought into focus the need for publication of the research results, for which *Sankhyā*, the first international journal of the country in Statistics, came into being in 1933.

Apart from the impact made in the world of Statistics, the Institute held a pivotal role in the task of nation building, when India became independent, through the brilliant choice of the area of surveys, which were socially and nationally relevant. The patronage and invaluable contribution of Sir Ronald A. Fisher played an important role. Led by Professor Mahalanobis and a very able group of younger statisticians including R.C. Bose, S.N. Roy and C.R. Rao, the Institute was poised to take on the larger role. The Institute is proud to have C.R. Rao, who is among the world leaders in statistical science over the last six decades and still active at the age of 93 as the Director of the Center for Multivariate Analysis at Pennsylvania State University, USA, in its list of alumni.

The 1950s saw the Institute establishing (i) a full fledged research and training school in Statistics and Probability, with its application in natural and social sciences, (ii) a planning wing entrusted with the formulation of the Second Five-Year Plan of India, (iii) publication of *Sankhyā*, (iv) the National Sample Survey wing engaging in comprehensive socio-economic data collection for the nation, (v) a string of Statistical Quality Control units for promoting the quality movement at various industrial centres in the country, (vi) a collaboration with the International Statistical Institute to train Government statisticians from Asia and Africa, and (vii) an Electronic Computer Laboratory that was responsible for developing (a) the 1st mechanical hand computing machine, (b) the 1st Analog computer, (c) the 1st Punched Card storing machine and (d) the 1st Solid State Computer in India, to name some of the principal activities. In 1954 Pandit Jawaharlal Nehru, the then Prime Minister of India, entrusted

Brief History

Professor Mahalanobis and ISI with the responsibility of preparing the draft Second Five-Year Plan for the country. The draft submitted by Prasanta Chandra Mahalanobis and the planning models formulated by him and his colleagues have since been regarded as major contributions to economic planning in India. In 1956, the Institute installed the first electronic computer in the country. In 1961, the ISI, in collaboration with Jadavpur University, undertook the design, development and fabrication of a fully transistorized digital computer, called ISI-JU-1, which was commissioned in 1966. The Institute, from its formative period till present times, received as guests eminent scientists, some of whom were Nobel Laureates. Besides Ronald A. Fisher, J.B.S. Haldane and Walter A. Shewhart, the luminaries included Frederic and Irene Curie, Neils Bohr, A.N. Kolmogorov, P.M.S. Blackett, J.D. Bernal, Joan Robinson, Genichi Taguchi and George Akerlof, 2001 Nobel prize winner in economics and a visiting professor of ISI during 1967-68. In recent times, the visit of Amartya K. Sen, Robert Aumann, Lotfi A. Zadeh, Joseph E. Stiglitz, Sir James A. Mirrlees, Eric Maskin, Ei-ichi Negishi, Ada Yonath, David Jonathan Gross and S.R.S. Varadhan, 2007 Abel Prize winner for his contributions to probability theory and an alumnus of the institute, may be specially mentioned.

The formal recognition came in December 1959, when Pandit Jawaharlal Nehru piloted in the Parliament the enactment of the Indian Statistical Institute Act of 1959, which designated ISI as an 'Institution of national importance'. The activities steadily grew, existing interests became more broad-based and a number of science units were created in the interest of live interaction between Statistics and Natural and Social Sciences. Empowered by the Act to award degrees, the Institute started the B. Stat. and M. Stat. courses. An excellent library was founded at Kolkata and the Documentation Research and Training Centre began functioning in Bangalore. Other developments in infrastructure also began.

During 1971-72, two decisions of the Government of India produced serious repercussions on the functioning of the ISI. One was de-linking of the Institute from the Perspective Planning Division of the Planning Commission in 1971, while the other was the separation of National Sample Survey from the ISI and its take-over by the Central Government in 1972. Professor Mahalanobis passed away on 28th June, 1972. It was a critical period for the Institute. To overcome the problem, the ISI sought to strike a judicious balance between the individual academic work on truly fundamental problems and the work that called for a greater engagement with the social and economic problems of the country. The members of the Institute, under the Chairmanship of Shri P.N. Haksar, held a Special General Body Meeting on 26th July, 1974 and amended the Memorandum of Association and the Regulations of the Institute, encouraging more inter-disciplinary research and enhancing active participation of the scientists of the ISI in decision-making process of the Institute. The organisational amendments were implemented, with the concurrence of Government of India, in August, 1976. The various research units in natural, social and computer sciences were grouped under a number of scientific Divisions.

Over the decades diversity in research thrusts began to grow manifold, with emphasis on Computer Science and application of Statistics in the new areas of research in natural and social sciences. Two centres, one at Delhi and one at Bangalore were created with full-fledged research and teaching programmes. The Delhi Centre, initially housed within the Planning Commission premises, was started in 1974, and shifted to its present campus in 1975. The Bangalore Centre was conceived by Prof. P.C. Mahalanobis during 1960s. With the Statistical Quality Control unit functioning in Bangalore from 1956, and Documentation Research and training Centre from 1962, Professor Mahalanobis thought of starting a centre of ISI around the mid-sixties. However, the activities of the Bangalore Centre started in September 1978 in a rented building under the Directorship of Professor G. Kallianpur. The various units moved to the present campus in May 1985 and in September 1996, the Bangalore Centre was formally declared as a Centre of ISI. The Chennai centre of the Institute came into being on 26th July, 2008 and has to its credit several theoretical and applied research work in Statistics and Mathematics, and many of the projects undertaken have been breakthrough applications. A North-East Centre of the Institute has been established at Tezpur, Assam on 23rd July, 2011 and it is also expected to focus on such diversity of teaching, training and research. This centre is currently housed in Tezpur University campus. The Post-Graduate Diploma in Statistical Methods and Analytics (PGDSMA) course has been running successfully at the N-E Centre, Tezpur. The Institute has started offering a

one-year Postgraduate Diploma in Computer Applications (PGDCA) since the year 2014-15 at its Giridih Branch. A two-year full time diploma programme, Post Graduate Diploma in Business Analytics (PGDBA) is being jointly offered by ISI, IIT Kharagpur and IIM Calcutta since 2015 with 51 students in the first batch.

The Institute is fully funded by the Ministry of Statistics & Programme Implementation, Govt. of India. The support and encouragement of the Ministry of Statistics & Programme Implementation, Govt. of India are among the major factors which are helping the Institute to sustain its academic growth and excellence. The Ministry provides funds to the Institute under Plan & Non-Plan budget as per the recommendations of a committee set up for the purpose by the Ministry of Statistics & Programme Implementation, Govt. of India under Section 8(1) of the "Indian Statistical Institute Act. 1959, No. 57 of 1959" based on the programme of research, teaching, training and various academic activities. The grants-in-aid provided by the Ministry of Statistics & Programme Implementation, Govt. of India to the Institute includes the funds required for construction of buildings, hostels, guest house, purchase of equipments, hiring manpower etc. The Ministry plays a pivotal role in expansion of the research & training activities of the Institute by way of opening its new Centres in various parts of the country. The North-East Centre at Tezpur, Assam which was inaugurated by Shri Pranab Mukherjee, the then Finance Minister, Govt. of India and the then Chairman, Indian Statistical Institute Council in the presence of Shri Srikant Jena, Hon'ble Union Minister for Ministry of Statistics & Programme Implementation, Govt. of India; Shri Tarun Gogoi, Hon'ble Chief Minister, Govt. of Assam; Dr. T.C.A. Anant, Secretary, Ministry of Statistics & Programme Implementation, Govt. of India and other dignitaries. In July 2012, the Ministry of Statistics & Programme Implementation, Govt. of India approved establishment of R.C. Bose Centre for Cryptology and Security as a separate Centre of the Institute.

The present structure of eight divisions has been arrived at through some further changes. Recently there have been some changes. Systems Science and Informatics Unit (SSIU) has been started as a part of the Computer and Communication Sciences Division (CCSD) at ISI Bangalore centre in August 2009. The Documentation Research and Training Centre (DRTC) has been made a part of CCSD. Cryptology and Security Research Unit (CSRU) also became a part of CCSD since April, 2014. Which is an integral component of R.C. Bose Centre for Cryptology and Security, Kolkata, a national hub for cryptographic requirements. The Indian Statistical Institute Act of 1959 was amended by the Parliament in 1995 to empower the Institute to award Degrees/Diplomas not only in Statistics, but also in Mathematics, Quantitative Economics, Computer Science and such other subjects related to Statistics as may be determined by the Institute from time to time. Several new courses have also been added since: M. Tech. in Computer Science, M. Tech. in Quality, Reliability and Operations Research, M.S. in Quantitative Economics, B. Math. and M. Math.

In conclusion, a list of the distinguished scientists and statesmen who have served the Institute during the 86 years of its existence in the capacities of President, Chairman or Director is presented. A list of recipients of the honorary D. Sc. degree given by the Institute is also provided.

Presidents of the Institute

1	Sir Rajendra Nath Mookerjee	1932-35
2	Shri E.C. Benthall	1936-37
3	Shri James Reid-Kay	1938
4	Shri Badridas Goenka	1939-41
5	Dr. Nalini Ranjan Sarkar	1942-43
6	Dr. Chintaman D. Deshmukh	1944-63
7	Shri Y.B. Chavan	1964-66
8	Prof. Satyendra Nath Bose	1967-75
9	Shri Subimal Dutt	1976-89
10	Prof. M.G.K. Menon	1990-2012
11	Dr. C. Rangarajan	2012-16
12	Dr. Vijay Kelkar	2016-till date

Chairmen of the Institute

1	Shri B. Rama Rao	1954
2	Shri D.N. Mitra	1955-63
3	Shri K.P.S. Menon	1964-70
4	Shri S.C. Roy	1971
5	Dr. Atma Ram	1972
6	Shri. P.N. Haksar	1973-97
7	Dr. Bimal Jalan	1998-2001
8	Dr. N.R. Madhava Menon	2002-03
9	Shri Pranab Mukherjee	2004-12
10	Shri A.K. Antony	2012-14
11	Dr. Arun Shourie	2014-16
12	Prof. Goverdhan Mehta	2016- till date

Directors of the Institute

1	Prof. P.C. Mahalanobis	Dec	1931	-	June	1972
2	Prof. C.R. Rao	July	1972	-	June	1976
3	Prof. G. Kallianpur	July	1976	-	Sept	1978
4	Prof. B.P. Adhikari	Aug	1979	-	Oct	1983
5	Prof. Ashok Maitra	April	1984	-	Jan	1987
6	Prof. J.K. Ghosh	Jan	1987	-	Jan	1992
7	Prof. B.L.S. Prakasa Rao	Jun	1992	-	Feb	1995
8	Prof. S.B. Rao	July	1995	-	July	2000
9	Prof. K.B. Sinha	Aug	2000	-	July	2005
10	Prof. S.K. Pal	Aug	2005	-	July	2010
11	Prof. Bimal K. Roy	Aug	2010	-	July	2015
12	Prof. Sanghamitra Bandyopadhyay	Aug	2015	-	till date	

List of persons awarded the D.Sc. (Honoris Causa) by the Institute

February 1962	Prof. Satyendra Nath Bose, Prof. Ronald A. Fisher, Pandit Jawaharlal Nehru, Dr. Walter A. Shewhart
April 1962	Prof. A.N. Kolmogorov
May 1965	Dr. Chintaman Dwarkanath Deshmukh
December 1974	Prof. Raj Chandra Bose, Dr. M.V. Keldysh, Prof. Jerzy Neyman
February 1977	Prof. Harald Cramer
February 1978	Shri Morarji Desai, Prof. L.V. Kantorovich
December 1989	Prof. C.R. Rao
January 2001	Prof. Gopinath Kallianpur
February 2004	Prof. S.R. Srinivasa Varadhan
March 2006	Prof. L.A. Zadeh
December 2006	Dr. Manmohan Singh
February 2011	Dr. Subhas Mukherjee (Posthumously)
January 2013	Prof. K.R. Parthasarathy, Prof. Jayanta Kr. Ghosh, Prof. Pranab Bardhan

1. TEACHING AND TRAINING

A brief account of teaching and training activities of the Teaching and Training Division during the academic session **2017-2018** is given below.

Degree and Training Courses

During the academic session **2017-2018**, a total of **23975** candidates applied for admission and were called for written selection tests for various programmes offered by the Institute, viz., B. Stat. (Hons.), B. Math. (Hons.), M. Stat., M. Math., Master of Science (M.S.) in Quantitative Economics, Master of Science (M.S.) in Quality Management Science, Master of Science (M.S.) in Library and Information Science, M. Tech. in Computer Science, M. Tech. in Quality, Reliability and Operations Research, Post Graduate Diploma in Statistical Methods and Analytics, Post Graduate Diploma in Computer Applications, Post Graduate Diploma in Business Analytics, **Research Fellowships** in Statistics, Mathematics, Quantitative Economics, Computer Science, Quality, Reliability and Operations Research, Physics, Agricultural Chemistry & Soil Science, Geology, Library and Information Science, Linguistics, Sociology and Psychology. Admission tests were conducted at 49 different centres. A total of **16071** candidates finally appeared for admission tests and a total of 1440 candidates qualified in the written tests and were called for interviews. Based on performance in the written tests, interview and the academic records, 397 candidates were offered admission to various courses during the academic session under review.

The annual examinations for all the regular courses during 2016-2017 academic session were held during May 2017. The 2017-2018 academic session commenced from **July, 2017**.

The number of candidates admitted to the different degree, Diploma programmes and in Junior Research Fellowship during 2017-2018 and the number of students who passed the annual examinations in 2017, are given in **Table 1**.

Till **31st** March**, 2018, 135** trainees in Mathematics, Statistics, Engineering and Technology from various Universities/Institutions (Academy of Technology, Amrita Vishwa Vidyapetham, Kolam; Asutosh College, Kolkata; B.R. Ambedkar National Institute of Technology, Jalandhar; Ballygunge Science College, Kolkata; Bengal School of Technology; Bidhan Nagar College; BIT, Zuarinagar; Camellia Institute of Technology, Kolkata; CMC, Vellore; Cochin University of Science & Technology; Department of Technology and Biotechnology, West Bengal; Doon University; Electronics and Telecommunication Engineering, Raipur; Government College of Engineering and Leather Technology, Kolkata; Guru Nanak Institute of Pharmaceutical Science & Technology, Panihati; Heritage Institute of Technology, Kolkata; Hyderabad University, Hyderabad; IIEST, Shibpur; IIIT, Chittor; IISER, Berhampur; IISER, Kolkata; IIT, Delhi; IIT, Kanpur; IIT, Guwahati; IIT, Kharagpur, IIT, Mumbai; IIT, Patna; IIT, Roorkee; Indian Institute of Information Technology, Jabalpur; Indian Institute of Science Education and Research; Indian Institute of Space Science and Technology; Indian National Science Academy, New Delhi; Institute of Engineering & Management, Kolkata; ISM, Dhanbad; International Institute for Population Sciences, Mumbai; Jadavpur University, Kolkata; Jalpaiguri Government Engineering College, Jalpaiguri; Kalyani University, Kalyani; KIIT University, Bhubaneswar; National Institute of Technology, Durgapur; NIT, Rourkela; NIT, Tiruchirappalli; Pondicherry University; RCCIIT, Kolkata; Savitribai Phule Pune University, Pune; SRM University, Chennai; SMIT, Majitar; St. Xavier's College, Kolkata; Techno India University, Kolkata; Techno India, Kolkata; University of Calcutta; University of Delhi; VIT, Vellore) received four weeks/six weeks/two months/three months/four months and six months Project training in different Units of the Institute, viz., ACMU, AERU, ASU, CSSC, CVPRU, ECSU, GSU, HGU, MIU, PAMU, SMU, SOSU and SQC & OR Unit under the guidance of different faculty members of the Institute.

Convocation

The **52nd Convocation** of the Indian Statistical Institute was held on **9th January, 2018, at 11.00 A.M.** It started with a Vedic Hymn by the ISI Club, followed by a welcome address by Dr. Vijay Kelkar, President, ISI, annual review by Prof. Sanghamitra Bandyopadhyay, Director, ISI and a Convocation Address by Professor David Jonathan Gross, Nobel Laureate, University of California Santa Barbara. Degrees and Diplomas were awarded to students by Dr. Vijay Kelkar. The Convocation was closed by Dr. Vijay Kelkar, after a vote of thanks by Dr. Amita Pal, Dean of Studies, ISI and the National Anthem by ISI Club. The list of recipients of various medals and prizes is given below.

Prasanta Chandra Mahalanobis Gold Medal for the most outstanding performance in ***M. Stat.*** students (2015-2017):

Ambarish Chattopadhyay

ISI Alumni Association ***Mrs. M.R. Iyer Memorial Gold Medals*** for outstanding performances:

B. Stat. (Hons.)**:** Sagnik Nandy ***M. Stat.*** **:** Debarghya Mukherjee

M. Tech. (QROR)**:** Subham Roy

ISI Alumni Association ***Rashi Ray Memorial Medals*** for outstanding performance in ***M. Tech. (CS)*** (2015-2017):

Rajarshi Bhattacharjee

ISI Alumni Association ***P.C. Panesar Gold Medal*** for outstanding performance in ***M. Math.*** (2015-2017):

Shubhodip Mondal

Mukul Chaudhuri Memorial Prize **for** the best female student in ***B. Stat. (Hons.)*** first year batch (2016-2017):

Debolina Paul

Mukul Chaudhuri Memorial Prize **for** the best female student in ***B. Stat. (Hons.)*** second year batch (2016-2017):

Disha Ghandwani

Nikhilesh Bhattacharya Memorial Gold Medal for the best student in ***B. Stat. (Hons.)*** (2014-2017):

Sagnik Nandy

D. Basu Memorial Gold Medal for outstanding presentation as well as best performance in ***B. Stat. (Hons.) Programme*** (2013 – 2016):

Sayan Das Souvik Ray

D. Basu Memorial Gold Medal for outstanding presentation as well as best performance in ***B. Stat. (Hons.) Programme*** (2014 – 2017):

Apratim Dey Sagnik Nandy

S.H. Aravind Gold Medal for outstanding performance in ***B. Math. (Hons.)*** (2014-2017):

Tejaswi Tripathi

Sabyasachi Roy Memorial Gold Medal for the best project work in second year of ***M. Stat. Programme*** (2015-2017):

Saikat Palit

Sunity Kumar Pal Gold Medal for the best dissertation in ***M. Tech. (CS)*** (2015-2017):

Koushik K. Dey

TCS award for the best dissertation in ***M. Tech. (CS)*** (2015-2017):

Akshay Bansal

Dr. N.S. Iyenger Award for best student of ***Econometrics*** (2015-2017):

Manish Agarwal

Sanghamitra Das Memorial Gold Medal Award for outstanding performance in ***M. S. (Q.E.) Programme*** (2015-2017):

Manish Agarwal

Raja Rao Memorial Prize for outstanding research work (2017-2018):

Dr. Kiranmoy Chatterjee

M. N. Murthy Memorial Prize for outstanding research work (2017-2018):

Dr. Prajamitra Bhuyan

Haldane Memorial Prize for outstanding research work (2017-2018):

Dr. Abhik Ghosh

In addition to regular teaching duties in various academic programmes of the Institute, the faculty members of the Institute offered research courses in consultation with the research fellow advisory committees of respective divisions for the research fellows of the Institute.

Teaching and Training

Table – 1

Number of students passed the different courses during 2017 and number of existing students/fellows during 2017-2018.

Sl. No.	Courses		Number of students who passed the Annual Examination	
			In 2017	**During the year 2017-18**
01.	**B. Stat. (Hons./Pass)** (Offered at Kolkata)	1st year 2nd year 3rd year	43 32 18	34 45☼☼ 33☼
02.	**B. Math. (Hons./Pass)** (Offered at Bangalore)	1st year 2nd year 3rd year	32 18 20	28☼☼ 34☼☼ 23☼☼☼
03.	**M. Math.** (Offered at Kolkata & Bangalore- in alternative year)	1st year 2nd year	14 17	27 15☼
04.	**M. Stat.** (Offered at Kolkata, Delhi & Chennai)	1st year 2nd year	36## = (19+8+9) 32	43## = (19$+12+12) 36
05.	**M.S. (QMS)** (Offered at Bangalore)	1st year 2nd year	11 11	13 11
06.	**M.S. (QE)** (Offered at Kolkata & Delhi)	1st year 2nd year	40# = (13+27) 37# = (15+22)	41# = (17+24) 40# = (13+27)
07.	**M. Tech. (CS)** (Offered at Kolkata)	1st year 2nd year	21 21	29 21
08.	**M. Tech. (QROR)** (Offered at Kolkata)	1st year 2nd year	17 17	23 17
09.	**M.S. (Library and Information Science)** (Offered at Bangalore)	1st year 2nd year	10 07	17 10
10.	**Post-Graduate Diploma in Statistical Methods and Analytics** (Offered at North-East Centre, Tezpur)	1st year	15	14
11.	**Post-Graduate Diploma in Computer Applications** (Offered at Giridih)	1st year	04	07
12.	**Post Graduate Diploma in Business Analytics** (Offered at Kolkata)	1st Semester	52	53
13.	**Junior & Senior Research Fellows in different disciplines** (Offered at Kolkata, Delhi, Bangalore, Chennai & Hyderabad)		16	204***
Grand Total			**541**	**818**

☼ One student repeating a year, ☼☼ Two students repeating a year, ☼☼☼ Three students repeating a year
$ One student in exchange programme,
# Total number including Kolkata and Delhi,
Total number including Kolkata, Delhi and Chennai,
*** JRF & SRF at Kolkata

Table 2

Ph. D degree awarded by the Institute in the 52st Convocation held on 09.01.2018

Sl. No.	Name of the Fellow	Title of the Thesis	Subject	University / Institute	Name of the Supervisor(s)
1.	Arnab Mandal M. Sc. (Mathematics) (University of Calcutta)	Quantum Isometry Groups of Dual of Finitely Generated Discrete Groups and Quantum Groups.	Mathematics	ISI	Prof. Debashish Goswami, SMU, ISI, Kolkata
2.	Ayan Bhattacharya M. Sc. (Statistics) (IIT Kanpur)	Heavy-Tailed Random Field from Statistical and Probabilistic Perspective: branching walks and stable fields.	Statistics	ISI	Dr. Parthanil Roy, SMU, ISI, Bangalore
3.	Mansi Garg M. Sc. (Statistics) (Indian Statistical Institute)	Statistical Analysis of Associated Data Using U-Statistics.	Statistics	ISI	Prof. Isha Dewan, SMU, ISI, Delhi
4.	Prasenjit Ghosh M. Sc. (Statistics) (IIT Kanpur)	Some Theoretical and Methodological Aspects of Simultaneous Inference with Special Emphasis on High Dimensional Problems under Sparsity.	Statistics	ISI	Dr. Arijit Chakrabarti, ASU, ISI, Kolkata
5.	Kaushik Jana M. Sc. (Statistics) (University of Kalyani)	Statistical Models and Methods for Some Environmental Problems	Statistics	ISI	Prof. Debasis Sengupta, ASU, ISI, Kolkata
6.	Jayant Jha M. Sc. (Statistics) (IIT Kanpur)	Regression on a Unit Sphere.	Statistics	ISI	Prof. Atanu Biswas, ASU, ISI, Kolkata
7.	Chandril Bhattacharyya M. Sc. (Economics) (University of Calcutta)	Unionization, Optimal Fiscal Policy and Endogenous Economic Growth.	Quantitative Economics	ISI	Prof. Manash Ranjan Gupta, ERU, ISI, Kolkata

Teaching and Training

8.	Parikshit De M. Sc. (Economics) (University of Calcutta)	Mechanism Design In Sequencing Problems.	Quantitative Economics	ISI	Prof. Manipushpak Mitra, ERU, ISI, Kolkata
9.	Sutirtha Bandyopadhyay M. A. (Economics) (Jadavpur University)	Essays on Applied Welfare Economics.	Quantitative Economics	ISI	Prof. Bharat Ramaswami, EPU, ISI, Delhi
10.	Abhirup Banerjee M. Stat. (Indian Statistical Institute)	Rough Sets and Probabilistic Models for Segmentation and Bias Field Correction in Brain MR Images.	Computer Science	ISI	Dr. Pradipta Maji, MIU, ISI, Kolkata
11.	Sukanta Bhattacharjee M. Tech. (Computer Science) (Indian Statistical Institute)	Algorithms for biochemical sample preparation and technology-shift for microfluidic lab-on-chip.	Computer Science	ISI	Prof. Bhargab B. Bhattacharya, ACMU, ISI, Kolkata
12.	Apurbalal Senapati M. Tech. (Computer Science) (Indian Statistical Institute)	Pronominal Anaphora Resolution in Bengali.	Computer Science	ISI	Prof. Utpal Garain, CVPRU, ISI, Kolkata
13.	Avik Chakraborti M. Tech. (Computer Science) (Indian Statistical Institute)	Design, Analysis and Implementation of Authenticated Encryption Algorithms.	Computer Science	ISI	Dr. Mridul Nandi, ASU, ISI, Kolkata
14.	K. Ramachandra Murthy M. Tech. (Computer Science) (Indian Statistical Institute)	On Eigenspace Transform for Dimensionality Reduction and its Applications to Pattern Classification.	Computer Science	ISI	Prof. Ashish Ghosh, MIU, ISI, Kolkata
15.	Partha Garai M. Tech. (Information Technology) (West Bengal University of Technology, Kolkata)	Development of Some Scalable Pattern Recognition Algorithms for Real Life Data Analysis.	Computer Science	ISI	Dr. Pradipta Maji, MIU, ISI, Kolkata

16.	Moutushi Chatterjee M. Tech. (Quality, Reliability and Operations Research) (Indian Statistical Institute)	On Some Univariate and Multivariate Process Capability Indices.	Quality, Reliability and Operations Research	ISI	Dr. Ashis Kumar Chakraborty, SQC & OR Unit, ISI, Kolkata

Table 3

Research Fellows who have been awarded Ph. D degree by Academic Bodies other than ISI during 2017 for work done in the ISI

Sl. No.	Name of the Fellow	Title of the Thesis	University	Name of the Supervisor (s)
1.	Pranav Chand Rayabarapu	Identification of susceptible genetic polymorphisms associated with Coronary Heart Disease in the South Indian Population.	Osmania University	Prof. B.M. Reddy, BAU, ISI, Hyderabad
2.	Avatharam Ganivada	Fuzzy Rough Granular Neural Networks for Pattern Recognition and Mining.	University of Calcutta	Dr. Shubhra Sankar Ray, MIU, ISI, Kolkata
3.	Aloke Datta	Dimensionality Reduction in Hyperspectral Images.	Jadavpur University	Prof. Ashish Ghosh, Center for Soft Computing Research, ISI, Kolkata
4.	Nanda Dulal Jana	Protein Structure Prediction using Metaheuristic Algorithms: A Perspective from Fitness Landscape Analysis.	Indian Institute of Engineering Science and Technology (IIEST), Shibpur	Prof. Jaya Sil, Dept. of Comp. Sc. and Engg., IIEST and Dr. Swagatam Das, ECSU, ISI, Kolkata
5.	Saiyed Umer	Design and Development of Biometric Recognition System using Multi-Instance Iris Images.	Jadavpur University	Dr. Bibhas Chandra Dhara, Department of IT, Jadavpur University and Prof. Bhabatosh Chanda, ECSU, ISI, Kolkata
6.	Achyut Kumar Banerjee	Investigations on The Invasiveness of Mikania micrantha Kunth (Asteraceae) With Respect to its Spread and Distribution in Greater Kolkata.	University of Calcutta	Prof. Anjana Dewanji, AERU, ISI, Kolkata

Teaching and Training

7.	Kaushik Sarkar	Turbulent Flow Characteristics & its Effects on Sedimentations and Process Around Submerged Objects	Jadavpur University	Prof. B.S. Muzumder (Retired), and Prof. Subir Ghosh, PAMU, ISI, Kolkata
8.	Souvik Pramanik	Effects of Cutoff Scale Theory in Physics.	University of Calcutta	Prof. Subir Ghosh, PAMU, ISI, Kolkata
9.	Abhijit Das	Towards Multimodal Sclera and Iris Biometrics Recognition with Adaptive Liveness Detection.	Griffith University	Prof. Michael Blumenstein, Griffith University, Australia and Prof. Umapada Pal, CVPRU, ISI, Kolkata
10.	Arundhati Tarafdar	Words Spotting from Multilingual and Stylistic Documents.	PolyTech Tours, Université François-Rabelais, Tours, France	Prof. Jean-Yves Ramel, Dr. Nicolas Ragot, Laboratoire d'Informatique, PolyTech Tours, Université François-Rabelais, Tours, France and Prof. Umapada Pal, CVPRU, ISI, Kolkata
11.	Nilamadhabha Tripathy	On the Development of an Optical Character Recognition (OCR) System for Complex Indian Documents.	Jadavpur University	Prof. Umapada Pal, CVPRU, ISI, Kolkata and Prof. Mita Nasipuri, Dept. of Computer Science and Engineering , Jadavpur University, Kolkata, India
12.	Dipasree Pal	Some Studies on Improving Automatic Query Expansion.	Jadavpur University	Dr. Mandar Mitra, CVPRU, ISI, Kolkata and Dr. Samar Bhattacharyya, School of Education Technology, Jadavpur University

Number of candidates who were awarded degrees in the 52nd Convocation of the Institute held on 9th January, 2018

Degree /Diploma	Number of candidates
Doctor of Philosophy (Ph.D.)	28*
Master of Technology (M. Tech.) in Computer Science	21
Master of Technology (M. Tech.) in Quality, Reliability and Operations Research	17
Master of Statistics (M. Stat.)	32
Master of Mathematics (M. Math.)	17
Master of Science (M. S.) in Quantitative Economics	37
Master of Science (M. S.) in Library and Information Science	07
Master of Science (M. S.) in Quality Management Science	11
Bachelor of Statistics (Honours) [B. Stat. (Hons.)]	18
Bachelor of Mathematics (Honours) [B. Math. (Hons.)]	19
Bachelor of Mathematics (B. Math.)	01
Post-Graduate Diploma in Statistical Methods and Analytics	15
Post-Graduate Diploma in Computer Applications	04
Total	**227**

* **(Including those who worked in the Institute but were awarded Ph.D. degree by other academic bodies.)**

International Statistical Education Centre (ISEC)

The International Statistical Education Centre (ISEC) was founded in 1950 at the initiative of Professor P.C. Mahalanobis. The Centre opened at Kolkata through an agreement between the International Statistical Institute and the Indian Statistical Institute (ISI). At present, the Centre is run by the Indian Statistical Institute under the auspices of the Government of India. The Centre functions under a joint Board of Directors. In its history of more than 60 years, Prof. P.C. Mahalanobis was the Chairman of the Board of Directors since the inception of the Centre in 1950 until his death in 1972. Since then, Professor C.R. Rao had been the Chairman of the Board till 2015. Currently, Prof. S.P. Mukherjee is the Chairman of the Board.

The Centre aims to provide training in theoretical and applied statistics at various levels to selected participants from countries of the Middle East, the South and the South-East Asia, the Far-East and the commonwealth countries of Africa. The primary training programme is a 10-month regular course in Statistics leading to a Statistical Training Diploma. In addition, special courses on different topics of varying duration are also organized.

The commencement date of the 71st Term of the ISEC Regular Course (2017-2018) was August 1, 2017. There were 25 trainees from eleven countries, namely, (1) Bhutan, (2) Cambodia, (3) Fiji, (4) Mongolia, (5) Myanmar, (6) Nepal, (7) Nigar, (8) South Africa, (9) South Sudan, (10) Sri Lanka, (11)Tanzania. Nineteen trainees were supported by fellowships under the Indian Technical and Economic Co-operation (ITEC) / Special Commonwealth African Assistance Plan (SCAAP) of the Government of India while three were supported by the TCS Colombo Plan. They will be awarded the Statistical Training Diploma in the Convocation, scheduled on May 31, 2018.

The ISEC in its totality has shifted now to the first floor in a new building, named Deshmukh Bhavan, at 202, B.T. Road, Kolkata 700108, and has four class rooms, one computer laboratory, one library and a number of rooms for the Member-Secretary, the Programme Coordinator and the faculty members with all modern amenities including scope for interactive presentations. Professor Sanghamitra Bandyopadhyay, Director, ISI has taken special interest in enhancing the international image of the ISEC courses and its infrastructure. The trainees have been provided with computer facilities and internet connections in the Computer Laboratory and in the ISEC hostel. They also have access to the books at the ISI library. Teachers at the headquarter of the Indian Statistical Institute and officers of the Government of India at the National Statistical Systems Training Academy, the National Sample Survey Office and various ministries have been participating in teaching the Regular Course throughout the years (including the current year). Till now, about 1653 trainees from 84 countries have received the Statistical Training Diploma.

2. RESEARCH AND OTHER SCIENTIFIC ACTIVITIES

The major thrust of the Institute is on research in various disciplines comprising Theoretical and Applied Statistics, Mathematics, Computer Sciences, Biological Sciences, Economics and other Social Sciences, Physics and Earth Sciences, Statistical Quality Control and Operations Research, and Library and Information Sciences. Scientists of the Institute carry out independent research in their own basic discipline and also undertake interdisciplinary research in collaboration with other units within the Institute and also with outside organizations. The Institute also takes up various internally and externally funded projects in diverse fields on challenging live problems of national and international importance. As a part of research activities, scientists of the Institute are involved in consultancy work as well. This section gives a brief account of the principal areas of work, over the past year, of the scientific divisions of the Institute, namely, the Divisions of:

- Theoretical Statistics and Mathematics
- Applied Statistics
- Computer and Communication Sciences
- Physics and Earth Sciences
- Biological Sciences
- Social Sciences
- Statistical Quality Control and Operations Research
- Library, Documentation and Information Sciences

In addition, there is a report each from the 'Center for Soft Computing Research: A National Facility' and the 'Computer and Statistical Services Centre'.

Theoretical Statistics and Mathematics Division

The Theoretical and Mathematics Division, which presently has units in Kolkata, Delhi, Bangalore and Chennai, continued its activities in the areas of Research, Teaching, conducting Workshops, International conferences and project related activities.

Some of the main thrust areas of research of the Division during this period are:

Bootstrap in dependent and high-dimensional models, econometrics, environmetrics, data depth, inference in high dimensional statistical models, life testing reliability, associated random variables, nonparametric inference, parametric and nonparametric Bayesian inference, statistical graphics, statistical signal processing.

Algebra, algebraic Geometry, commutative Algebra. complex analysis, functional Analysis, geometry and topology, Gromov-Haussdorf vague topology, harmonic analysis, linear algebra, non-commutative geometry, number theory, operator algebra, operator theory, quantum Groups,

Drainage networks and Brownian wave, financial mathematics, free probability, Gaussian free fields, large deviation, large dimensional random matrices, percolation, point processes, random complexes, random graphs, random walks on trees, random walk in random environment, urn models.

Colleagues also continued collaborative research under internal and externally funded projects with funding from prestigious organizations like Fulbright Academic Excellence Fellowship, Indo-Israel projects, JC Bose Fellowship, Marie Curie Research Staff Exchange, Microsoft Research, Hitachi.

Publications by the Division include over 150 papers in reputed international and national journals and colleagues also contributed editorial activities of monographs and journals.

Research Activities

Recognition bestowed on our colleagues during this period included Associateship of the Academy of Science, BM Birla Science prize, Fellowship of Indian Academy of Sciences, Hans Schneider Prize, Infosys Prize, JC Bose Fellowship, Young researcher awards,

The Division conducted several national and international conferences. The flagship lectures PC Mahalanobis Memorial Lecture and the Ashok Maitra Memorial lectures were delivered by Professor IM Johnstone and Professor Mathew Penrose. Professor S.R.S. Varadhan gave a mini course on Random Graphs.

Stat-Math Unit, Kolkata

Commutative Algebra:

- **Study of A^3-forms over a field k of characteristic zero**
- **Triviality of any A^2-form over any one-dimensional Noetherian domain containing the field of rational numbers**

Dutta, Amartya Kumar, Gupta, Neena and Lahiri, Animesh

Geometry and Topology:

- **Study of rigidity problems for CAT (-1) spaces**
- **Study of harmonic analysis on simply connected, negatively curved harmonic manifolds**

Biswas, Kingshook

- **Nambu structure on Lie algebroid, its associtated bialgebroid and obtained some applications**

Mukherjee, Goutam, Basu, Samik, Das, Apurba and Basu Somnath

- **Introduced deformations of algebraic structures under the presence of finite group actions**

Goutam Mukherjee and Yadav, Raj B.

Stat-Math Unit, Delhi

"Power of Two Choices" in Negatively Reinforced Pólya Urn. In this work, we consider an implementation strategy for weighted negative reinforcement in Pólya Urn scheme

Bandyopadhyay, Antar and Kaur, Gursharn

A study of modified Branching Random Walk model

Bandyopadhyay, Antar and Ghosh, Partha Pratim

GMM estimation using incomplete covariates, Group testing, Pseudo-likelihood theory, High-dimensional estimation

Chatterjee, Arindam

A study of the irreducibility of a general family of classical orthogonal polynomials, particularly Hermite-Laguerre polynomials and Generalized Laguerre polynomials and their associated Galois groups

Laishram, Shanta, Nair, S., Shorey, T.N., Jindal, A. and Sharma R.

A study of irreducibility of Laguerre polynomials L^{(q)}(x) and L^{(q)}(x^d) with q in {±1/3, ±2/3, ±1/4, ±3/4}, where d is the denominator of q

Laishram, Shanta and Shorey, T.N.

Worked on exponential diophantine equations

Laishram, Shanta

Worked on finding rational points on a Variations of Erd\H{o}s- Selfridge superelliptic curves which appeared in Mathematika

Laishram, Shanta, Das, P. and Saradha, N.

Worked on the problem of existence of infinitely many positive integers who sum of digits in different bases are close enough

Laishram, Shanta, Deshouillers, J.M., Habsieger, L., and Landreau, Bernard

Proved some general results on perfect powers in products of terms of arithmetic progressions

Laishram, Shanta, Ngairangbam, S. and Singh, M.R.

Worked on Perfect powers in products of polynomials

Laishram, Shanta and Dey, Pallab Kant

Working on chirp signal model when variance may not exist and error random variables is from a symmetric stable distribution

Nandi, Swagata and Kundu, Debasis

Working on random amplitude chirp signal model. Studying the thereotical properties of an estimator

Nandi, Swagata and Kundu, Debasis

Working on multichannel sinusoidal signal

Nandi, Swagata and Kundu, Debasis

Working on chirp signal model when a linear trend is present

Nandi, Swagata

Stat-Math Unit, Bangalore

Interacting Particle Systems, Semi-linear Partial Differential Equations, Stochastic Partial Differential Equations, Diffusions on Trees, Dense/Sparse graph limits, and Trap models

Athreya, Siva

Bures distance and representation metric:

- **The notion Bures distance, originally defined for states has been extended to completely positive maps.**

Infinite mode Gaussian States:

- **Extension of a convexity and symmetry results of Prof. K R Parthasarthy for finite mode Gaussian states to that of infinite mode Gaussian states.**

Bhat, B.V. Rajarama, John, Tiju Cherian and Srinivasan, R.

Existence of Joint distributions:

- **To explore conditions under which bivariate distributions ensure existence of joint distributions.**

Bhat, B.V. Rajarama and Kumar, Vijaya

Bayesian approach to abundance and density estimation in ecological studies

Delampady, Mohan, Dey, Soumen and Gopalaswamy, Arjun

Research Activities

Study of estimates on the greatest prime factor of product of consecutive positive integers and more generally, of consecutive terms in arithmetic progressions dating back to Sylvester in 1892

Nair, Saranya G. (NBHM Post-doc)

Study of Lie groups admitting hyperbolic automorphisms

Raja, C.R.E. and Choudhary, M. (NBHM Post-doc)

Connections between stochastic differential equations and stochastic partial differential equations have been studied. Chaos expansions form the framework in which some foundational results in stochastic analysis have been proved. Chaos expansions for continuous martingales have been studied.

Rajeev, B., Bhar, Suprio, Sarkar, Barun and Tappe, Stefan

Study of Homotopy inertia groups:

- **For quarternionic projective space, we proved that the concordance inertia group is trivial in dimension 20, but there are many examples in high dimensions where the concordance inertia group is non-trivial.**

- **Following the results from the past research, planned to determine the group structure of the inertia group $I(\mathbb{CP}^n \times \mathbb{S}^1)$ of the product $\mathbb{CP}^n \times \mathbb{S}^1$.**

- **In particular, interested to know whether the kervaire sphere in dimension $4n+1$ lies in the inertia group $I(\mathbb{CP}^{2n} \times \mathbb{S}^1)$? (Already the case $n=1$ would be good).**

- **For the product $\mathbb{CP}^n \times \mathbb{S}^1$, Brumfiel (1971) showed that the inertia group coincides with the homotopy inertia group by using the fact that every homotopy self-equivalence of $\mathbb{CP}^n \times \mathbb{S}^1$ is homotopic to a diffeomorphism.**

- **Computing the inertia groups of $\mathbb{CP}^n \times \mathbb{S}^1$ have some interesting applications to symplectic topology.**

- **A direct consequence of a main result of Kreck's modified surgery theory (1999) is that the connected sum $M \# \Sigma$ of a closed simply connected manifold M of dimension $2m \geq 4$ with a homotopy sphere Σ is diffeomorphic to M provided Σ represents zero in a suitable bordism group Ω_B^{2m}.**

- **To classify all simply connected 8-manifolds and their geometric structures using Kreck's modified surgery theory and inertia groups via B-Bordism theory.**

- **To study how complex and symplectic structure on a smooth manifold depends on the smooth structure.**

Ramesh Kasilingam (INSPIRE Faculty)

Broad Topic of research: Operator theory and function theory

- **Representations of contractively embedded invariant subspaces in several variables (following L. de Branges)**
- **Concrete representations and characterizations of a large class of commuting n-tuples of isometries**
- **A complete characterization of invariant subspaces of the Hardy space over the unit polydisc. Also this yields an analytic description of a large class of n-tuples of commuting isometries**

- **The dichotomy of isometric dilations and von Neumann inequality for n-tuples, n larger than 2, with definite results has been pointed out**
- **A detailed analysis with concrete representations, with applications to invariant subspace problem, of Berger-Coburn-Lebow pairs of isometries**
- **Similarity and quasi-similarity of Cowen-Douglas class. This also relates the derivatives of sections, curvatures and corona problem in one variable**

Sarkar, Jaydeb

The problem of finding exact eigenvalue distribution of random symmetric Gaussian Toeplitz matrix is still open. Investigating this particular random matrix model so as to derive the limiting spectral distribution of random symmetric Toeplitz matrices.

Reddy, Nanda Kishore (INSPIRE Faculty)

Study of central limit theorem for exponentially quasi-local statistics of spin models on Cayley graphs

Yogeshwaran, D., Vadlamani, Sreekar and Reddy, Tulasi Ram

Sub-tree counts on hyperbolic random geometric graphs:

- **A study of asymptotics (expectation, variance and central limit theorem) for sub-tree counts (isomorphic copies of a fixed tree in the graph) in hyperbolic random geometric graphs for all $d \geq 2$.**

Yogeshwaran, D. and Owada, Takashi

Applied Statistics Division

The Applied Statistics Division came into being in September 1996 in place of the Applied Statistics, Survey and Computing Division. The Computer Science Unit was renamed as the Applied Statistics Unit and the Biometry Unit was transferred to the Biological Science Division. Till 2005-2006, the Applied Statistics Division consisted solely of the Applied Statistics Unit. In 2006, a new unit, namely, the Bayesian and Interdisciplinary Research Unit was created within this Division. Later in 2012, two more units named Applied and Official Statistics unit, North East centre, Tezpur and Applied Statistics Unit, Chennai became parts of this Division. In October 2014 Bayesian and Interdisciplinary Research Unit of this Division was renamed Interdisciplinary Statistical Research Unit.

The main activities of the Division include teaching, training, research and PhD guidance, projects and consultancy, academic administration, editorial work, etc., along with many others miscellaneous duties. All the members of the Division take active part in teaching in the degree and diploma courses of the institute. They also take part in ISEC and other short-term courses. The members of the Division regularly conduct North East workshops and Winter/ Summer schools and training programs on topics of general interest for users of Statistics, including researchers/ teachers, ISS officers and probationers, summer interns, high school students, officials from government and other agencies, etc. The Statistical Trainee programme for fresh MSc (Statistics) students is a unique training programme in which the trainees get hands-on experience with application-oriented research and projects and eventually assist the faculty members.

The research activities of the scientists of the Division have a wide focus. The topics of interest include Sample Surveys, Design of Experiments/ Optimal Designs, Statistical Inference/ Robust Inference, Bayesian Methods/ Decision Theory, Large Sample Theory/ Asymptotic Theory, Multivariate Analysis, Directional Data Analysis, Time Series Analysis, Reliability/Survival Analysis/ Actuarial Statistics, Epidemiology/ Clinical Trials, Environmental Statistics, Demography/ Population Studies, Image Processing/ Pattern and Speech Recognition/Neural Networks, Classification of Multivariate data,

Research Activities

Financial Statistics, Stochastic Modelling/ Applied Stochastic Processes, Statistical Computing/ Big Data Analysis, Cellular Automata/ Mathematical Genetics, Cryptology and Security, and several others.

Applied Statistics Unit, Kolkata

- **Reliabilty:**
  Based on a NHPP model for error occurrence, adapted to periodic debugging data, a method for estimating the reliability of a software has been developed

- **Survival Analysis:**
  Work on parametric analysis of misclassified right censored survival data including temporal misclassification and type misclassification as well, with application to estimation of adverse drug reaction risk

- **Design of Expeiments:**
  Optimal allocation of units with fixed covariate values into two or more treatment groups has been investigated in the context of generalized linear models (GLM) and incorporating the issue of robustness and balance.

- **Social Mobility:**
  An axiomatic approach to define social mobility is being attempted with related statistical issues and an application

- **Screening Studies:**
  The problem of finding an optimal screening age for Barrett's Esophagus (BE) in the pathway to Esophageal Adenocarcinoma (EAC) has been addressed and a solution based on a multistage clonal expansion model for EAC development has been found

Dewanji, Anup

Asymptotic optimality of one group shrinkage priors in high dimensional problems:
Multiple hypothesis testing under dependence

Chakrabarti, Arijit

Computational Genomics:
Understanding the classification of various protein families has been directed to MIPS protein leading a new method for the clustering diverse protein sequences applied to Drosophila olfactory report sequences

Pal Chaudhury, Pabitra

Interdisciplinary Statistical Research Unit, Kolkata

- **Robust Analysis of Censored Data**

- **Weighted Likelihood Estimation**

- **Selection of Optimal Tuning Parameters in Robust Estimation**

- **Robust Bayes Estimation**

Basu, Ayanendranath

A-optimal and Highly A- efficient Treatment Control Design in the Presence of Covariates

SahaRay, Rita and Dutta, Ganesh

Multi-label Classification

Bose, Smarajit, Chakraborty, Saptarshi

- **Multiple Hypotheses Testing in Dependant setup**

- **Statistical Classification Using Voronoi diagram**

Bhandari, Subir Kumar

- **The Asymptotic Theory, Both Classical and Bayesian for Systems of Stochastic Differential Equations with Random Effects Distributed as Gaussian Mixtures**

- **The Asymptotic Theory for Both Classical and Bayesian Paradigms, for Both Fixed and Random Effects Set-ups for Systems of Stochastic Differential Equations by Incorporating Time-varying Covariates in the System**

- **A Novel State Space Model Based on Stochastic Differential Equations and the Asymptotic Theory for Both Classical and Bayesian Inference**

Maitra, Trisha and Bhattacharya, Sourabh

Bayesian Theory for Investigation of Convergence, Divergence and Oscillation of Infinite Series

Roy, Sucharita and Bhattacharya, Sourabh

- **Performance of a Novel Bayesian Multiple Testing Procedure for the Dependent Set-up**

- **Asymptotic Properties of A Novel and General Bayesian Multiple Comparison Method Such That the Decision on Any Hypothesis Depends upon the Joint Posterior Probability of the Hypotheses on Which the Current Hypothesis Is Strongly Dependent**

Noirrit Kiran Chandra and Bhattacharya, Sourabh

- **Extention of the Bayesian Semiparametric Gene-gene Interaction Model of Bhattacharya & Bhattacharya (2016)**

- **Nonparametric Bayesian Model for Case-control Genotype Data using Hierarchies of Dirichlet Processes**

Bhattacharya, Durba and Bhattacharya, Sourabh

Applied Statistics Unit, Chennai

Jackknife Empirical Likelihood-based Inference for Sen Poverty Index

Sudheesh, K.K. and Sreelakshmi, N.

On the Mean Time to Failure of an Age-replacement Model in Discrete Time

Sudheesh, K.K. and Asha, G.

Jackknife Empirical Likelihood Based Inference for Probability Weighted Moments

Sudheesh, K.K., Deepesh, Bhati and Sreelakshmi, N.

Applied and Official Statistics Unit, North-East Centre, Tezpur

Study on psychosocial work characteristics and health (mainly depression and work stress) with applications of advanced statistical methods e.g. mixed models, structural equation models, autoregressive models, multilevel models

Chungkham, Holendro Singh, Westerlund, HugoHead, Jenny and Hanson, Linda Magnusson

Research Activities

A Study on the Implications for Lexicographic Preferences of Behavioural Traits of People which Are Naive

Goswami, Mridu Prabal, Mitra, Manipushpak (ERU, Kolkata) and Sen, Debapriya

Negative Externalities Due to Private Consumption and its Implications for Market Failure

Goswami, Mridu Prabal, Mitra, Manipushpak (ERU, Kolkata) and Sarkar, Soumendu

An Alternative Explanation of Standard Dictatorial and Ultimatum Games Based on Outcomes Instead of Intrinsic Normative Concerns

Goswami, Mridu Prabal, Ghosh, Sanmitra and Sarkar, Shubhro

Change Detection around Kaziranga National Park, Crop Health Monitoring around Tezpur, Applications of Deep Learning in Medical Imaging

Maitra, Sanjit

Analysis of Atmospheric Particulate Matter Removal Using Satellite Imagery Derived Vegetative Cover

Maitra, Sanjit and Jyethi, Darpa Saurav

Retrieval of Historic Atmospheric Black Carbon Concentration in the Arctic Region and North America

Jyethi, Darpa Saurav, Liaquat Husain and Vincent Dutkiewicz

Profile Analysis of Polycyclic Aromatic Hydrocarbons (PAHs) in Environmental Matrices

Darpa Saurav Jyethi and P.S. Khillare

Carbon Foot-printing of the Indian Tea Industry

Jyethi, Darpa Saurav and Pandey, Divya

Morphological and Chemical Characterisation Dtudy of Dust

Jyethi, Darpa Saurav

- **Systematic Review and Meta-analysis of RCTs on Maternal and Child Nutrition**
- **A Meta-analysis Combining Parallel and Cross-over Randomized Controlled Trials to Assess Impact of Fortified Foods on Serum Levels of Concentration among Children and Infants**
- **Current Nutritional Status of under Five year Children in India: a Retrospective Study**

Athe, Ramesh

Computer and Communication Sciences Division

Over the years, the Computer and Communication Sciences Division (CCSD) at ISI has grown to eight units spread over four centres:

- **Advanced Computing and Microelectronics Unit, Kolkata**
- **Computer Vision and Pattern Recognition Unit, Kolkata**
- **Electronics and Communication Sciences Unit, Kolkata**
- **Machine Intelligence Unit, Kolkata**

- **Documentation, Research and Training Centre, Bangalore**
- **Systems Science and Informatics Unit, Bangalore**
- **Computer Science Unit, Chennai**
- **Cryptology and Security Research Unit, RC Bose Centre for Cryptology & Security, Kolkata**

CCSD counts amongst its faculty a number of highly decorated scientists, as well as fellows of various prestigious national and international academies and societies. The various activities undertaken by the staff of this division are summarised in the following pages under the heads of teaching, research, externally and internally funded project work, workshops and conferences conducted, editorial work, etc.

Advanced Computing and Microelectronics Unit, Kolkata

The research activities in the Advanced Computing and Microelectronics Unit (ACMU) comprise theoretical and applied research in the areas of high performance computing, pervasive and mobile computing, wireless networks, cognitive radio, electronic design automation and testing for nanotechnology and giga-scale integration, embedded systems, system-on-a-chip, intellectual property protection of electronic design, low-power architectures, computational geometry, algorithms, computational biology, and hardware for image processing. The contributions of the faculty members have received world-wide acclaim as evident from their research profiles and publications in archival journals. Here follows a brief account of ongoing research projects and activities of this unit.

A brief report on each of these projects is presented below.

Holy Grail of Error-Resilient Bio-Assay on a Lab-on-a-Chip (HERBAL)

Bhattacharya, Bhargab B.

Massive Data Algorithms

Nandy, Subhas C.

- **GP-GPU Computing for Large Scale Networks**
- **Cellular Spectrum Sharing by Cognitive Radio for Ad Hoc Networks**

Das, Nabanita

A Framework for Collaborative Application Execution for Mobile Cloud Computing

Banerjee, Ansuman

- **Logic Synthesis for Quantum Computing (QCS)**
- **Algorithms for Design Automation in Next Generation Technologies**

Sur-Kolay, Susmita

Efficient Vertical Handover Techniques in Heterogeneous Wireless Networks

Ghosh, Sasthi C.

The Cops and Robber Game on Graphs

Das, Sandip

Algorithms and Bounds for Dominating Set, Geodetic Set and Obstacle Number in Graphs

Bishnu, Arijit, Ghosh, Arijit and Paul, Subhabrata

Geometric Optimization Problems

Roy, Sasanka

Computer Vision and Pattern Recognition Unit, Kolkata

A Search Engine for Historical Events

Datta, Suchana and Majumdar, Debapriyo

Stroke Order Normalization for Online Text Recognition

Bhattacharya, Nilanjana, Pal, Umapada and Roy, Partha Pratim

Caption and Scene Text Classification

Roy, Sangheeta, Shivakumara, Palaiahnakote, Pal, Umapada, Lu, Tong Wahab, and Ainuddin Wahid Bin Abdul

Printer Identification towards Forgery Detection

Wang, Zhen, Shivakumara, Palaiahnakote, Lu, Tong, Basavanna, Mahadevappa, Pal, Umapada and Blumenstein, Michael

Video Text Detection

Sain, Aneeshan, Bhunia, Ayan Kumar, Roy, Partha Pratim and Pal, Umapada

Degraded Quality Printed Document Recognition

Biswas, Chandan, Mukherjee, Partha Sarathi, Ghosh, Koyel, Bhattacharya, Ujjwal and Parui, Swapan K.

Generation of Synthetic Training Samples for Online Handwriting Recognition

Bhattacharya, Ujjwal, Plamondon, Rejean, Dutta Chowdhury, Souvik, Goyal, Pankaj and Parui, Swapan K.

End to End Online Handwriting Recognition

Mukherjee, Partha Sarathi, Bhattacharya, Ujjwal, Parui, Swapan K. and Chakraborty, Bappaditya

Offline Devanagari Handwriting Recognition

Chakraborty, Bappaditya, Shaw, Bikash, Aich, Jayanta, Bhattacharya, Ujjwal and Parui, Swapan K.,

Offline Handwritten Malayalam Word Recognition

P J, Jino, Balakrishnan, Kannan and Bhattacharya, Ujjwal

Human Computer Interaction

Saini, Rajkumar, Roy, Partha Pratim and Pal, Umapada

Human Face Detection

Chowdhury , Sanjoy, Mukherjee, Parthasarathi and Bhattacharya, Ujjwal

Biometrics

Das, Abhijit, Pal, Umapada, Ballester, Miguel Angel Ferrer and Blumenstein, Michael

Video quality assessment

Sanyal, Shreyan, Nandi, Sushmita and Palit, Sarbani

Musical Instrument Recognition

Banerjee, Anushka, Ghosh, Alekhya, Palit, Sarbani and Ballester, Miguel Angel Ferrer

Deep learning in Psoriasis Image Analysis

Pal, Anabik, Chaturvedi, Akshay, Garain, Utpal, Chatterjee, Raghunath, Chandra, Aditi and Senapati, Swapan

Deep Learning for Language Processing

Chakabarty, Abhisek, Pal, Anabik, Chaturvedi, Akshay, Das, Arjun, Pandit, Onkar, Ganguly, Debasis, and Garain, Utpal

Information Retrieval from Microblogs

Bandyopadhyay, Ayan, Ganguly, Debasis, Roy, Dwaipayan, Roy, Riya and Mitra, Mandar

Word Embeddings in Information Retrieval

Roy, Dwaipayan, Ganguly, Debasis, Bandyopadhyay, Ayan, Chowdhury, Amritap, Roy, Riya and Mitra, Mandar

Information Retrieval Evaluation

Bhattacharyya, Chiranjib, Majumder, Prasenjit, Roy, Dwaipayan and Mitra, Mandar

Electronics and Communication Sciences Unit, Kolkata

Improved Random Forest

Mukherjee, D.P.

- **Image Processing**
- **Image Analysis**

Chanda, B.

- **Statistical Properties of Machine Learning Algorithms**
- **Handling Data Irregularities in Machine Learning**

Das, S.

- **Event Recognition from unconstrained video**
- **Video Scene Classification**

Mohanta, P.P.

Computational Intelligence

Pal, N.R.

- **Object Tracking**
- **Common Sense Reasoning: Watson-Crick Automata**
- **DNA Computing**

Ray, K.S.

Machine Intelligence Unit, Kolkata

Pattern Recognition

Late Murthy, C.A. and Chattopadhyay, S.

Machine Learning

Ghosh, A. and Maji, P.

Data Mining

Research Activities

De, R.K.

Medical Imaging

Bandyopadyay, S., Mitra S., Ghosh, A. and Maji, P.

Biometry

Mitra, S.

- **Precision Medicine**
- **Computational Systems Biology**

De, R.K.

Bioinformatics

Bandyopadyay, S., De, R.K., Maji, P. and Ray, S.S.

Many-Objective Optimization

Bandyopadyay, S.

Machine Vision, Image Processing and Perception

Ghosh, K. and Bakshi, A.

Remote Sensing Image Analysis

Ghosh, K. and Neogi, S.

Rock thin section Image Analysis

Ghosh, K. and Das, R

Documentation, Research and Training Centre, Bangalore

The Documentation Research and Training Centre was established as an integral part of the Indian Statistical Institute in 1962. The primary objectives of DRTC are to promote research and training in the area of Library Science, Documentation and Information Science.

Activities

To achieve the objectives as mentioned above, the activities of DRTC have been grouped into:

a. **Research Programme**
b. **Educational and Training programme**
c. **Continuing Education etc.**

Integrating Ontologies for Information Resources

Biswas, Sudipta

Formalizing concept for knowledge representation and facet discovery

Chatterjee, Usashi

Area of Ontology i.e. especially developing ontologies in the area of natural disaster to efficiently manage the crisis situation

Sinha, Prashant Kumar

Citation Database

Sahoo, Subhranshu Bhusan

Linked data and Ontologies. He is reviewing the related literature of the stated area and also research data management

Bhoi, Narendra Kumar

Big Data, Data Curation, Data Repositories, Digital repositories, knowledge representation and management

Prasad, A.R.D

Knowledge organization, faceted systems and ontologies, open data and access to information, Knowledge management, open data infrastructures

Madalli, Devika P

Digital Library, Semantic Web, Social Network Analysis, Library Automation

Krishnamurthy, M

Semantic Web techniques and technologies, Knowledge Representation, Ontology, Metadata, Social network analysis

Dutta, Biswanath

Systems Science and Informatics Unit, Bangalore

Deep Learning Neural Networks, Granular Neural Networks, Pattern Recognition, Image Processing

Meher, Saroj K., Kothari, Neeta K. and Kumar, D. Arun

Visualizing Image Segmentation and Filtering Algorithms in Optimization Framework

Danda, Sravan, Najman, Laurent and Daya Sagar, B.S.

Morphological Interpolation

Challa, Aditya, Danda, Sravan, Najman, Laurent and Daya Sagar, B.S.

Mathematical Morphology on General Data

Challa, Aditya, Najman, Laurent and Daya Sagar, B.S.

Granulometric and Fractal Analyses for Feature (Shape-Size-Orientation) Based Classification of Planar and Grayscale Basins Hierarchically Decomposed from CARTOSAT-I DEMs

Vardhan, S. Ashok and Daya Sagar, B. S.

Quantitative Morphologic and Scaling Analyses of Lunar Digital Elevation Models (LDEM) Derived from TMC Data of Chandrayaan-1 Mission via Mathematical Morphology and Fractal Geometry

Surendran, Athira and Daya Sagar, B.S.

Quantitative Characterization of Complex Topologically Prominent Components of Porous Media derived from Rocks of Petrologic Significance via Mathematical Morphology and Fractal Geometry

Daya Sagar, B.S.

Neural information processing

Majumdar, Kaushik

Computer Science Unit, Chennai

Games in dynamic-epistemic logic

Ghosh, Sujata and Padmanabha, Anantha

From logical syntax to cognitive models

Top, Jordi, Verbrugge, Rineke and Ghosh, Sujata

Formal studies of the Bangla verb 'mone hoy'

Banerjee, Arka, Karmakar, Samir and Ghosh, Sujata

- **Weighted Independent Sets in Graph Classes**
- **Variations in vertex coloring**

T., Karthick

Vertex coloring of Graph Classes

T., Karthick and Maffray Frederic

Cograph dimension and permutation dimension of planar graphs

Chacko, Daphna and Francis, Mathew C.

Seymour's Second Neighbourhood Conjecture

Dara, Suresh, Francis, Mathew C., Jacob, Dalu and Narayanan, N.

Dushnik-Miller dimension of *d*-dimensional boxes

Francis, Mathew C. and Gonçalves, Daniel

Cryptology and Security Research Unit, Kolkata

Quantum Information / Computing / Cryptography

Paul, Goutam, Acharyya, Atanu (ASU), Das, Nayana (ASU), Das, Soumya, Chattopadhyay, Pritam and Ray, Souvik (SMU)

Symmetric Cryptanalysis

Paul, Goutam, Rahman, Mostafizar, Jana, Amit, Gangopadhyay, Sugata (IIT Roorkee).

Steganography

Paul, Goutam, Mukherjee, Imon (IIIT Kalyani), Ganguly, Nabanita (JU), Saha, Sanjay Kumar (JU).

Cloud Security

Ruj, Sushmita, Sengupta, Binanda (ASU), Sardar, Laltu, Dutta, Sabyasachi, Chatterjee, Ayantika, Nikam Nishant, Dixit Akanksha, Tahir Shahzaib (City University, London), Rajarajan Muthukrishnan (City University, London), Narayananmurthy, Srinivasan (NetApp Inc), Nandi, Siddhartha (NetApp Inc)

Blockchains

Ruj, Sushmita, Banerjee, Prabal, Singh Ram Govind, Mazumdar, Subhra, Pachal, Soumen, Kumari, Shashee, Conti, Mauro (Padua University, Italy), Lal, Chhagan (Padua University, Italy), Chattopadhyay, Anupam (NTU, Singapore), Sengupta, Sourav (NTU, Singapore), Raikwar, Mayank (NTU, Singapore)

Network Security

Ruj, Sushmita, Ghosh, Sarbani, Das Bit, Sipra (IIEST, Shibpur), Chatterjee, Tanusree (IIEST, Shibpur), Chatterjee, Ranit (IIEST, Shibpur)

- **Block Cipher Modes of Operations**
- **Secure and Efficient Implementations of Cryptographic Schemes**

Chakraborty, Debrup, Sarkar, Palash (ASU), Lopez, Cuauhtemoc Mancillas (Laboratoire Hubert Curien, France), Ghosh, Sebati (ASU)

Physics and Earth Sciences Division

The Division comprises of two units: Geological Studies Unit (GSU) and Physics & Applied Mathematics Unit (PAMU), both located at Kolkata.

The major areas of research of the Geological Studies Unit are Structural Geology, Sedimentology, Stratigraphy and Palaeontology. Most of these studies are based on extensive field work.

The thrust areas of research in PAMU are Theoretical Physics and Applied Mathematics. Additionally, some experimental work is being done in the Fluvial Mechanics Laboratory of this Unit. Broadly, the scientists work in the areas of Astrophysics and Data Analysis, Biological Optics, Condensed Matter Physics, Cosmology of the Early Universe, High Energy Physics, Mesoscopic Physics and Nanoelectronics, Quantum Field Theory, Quantum Information Theory, Quantum Mechanics, Nonlinear Dynamical Systems, Sediment-fluid Interactions and Flow Visualization.

Scientists have also carried out work on intndernally as well as externally funded projects. The division has published around 60 research papers in reputed international journals. It is also involved in teaching B. Stat. and M. Tech. courses apart from their own Ph.D. program. Also a few lecture series, workshops and conferences were organized during this period.

Geological Studies Unit, Kolkata

Research programme of the Geological Studies Unit currently hinges on

- **The Archean greenstone belts of India, its tectonics and sedimentation as well as basin analysis**
- **Paleostress from fault slip analysis and paleosiesmicity in the Main Boundary Thrust zone**

Saha, Dilip

- **Evolution of dolomite formations in the Cuddapah basin**
- **Numerical models of fluid flow in Cuddapah basin**

Bannerjee, Amlan

Sedimentary models of Precambrian Ergs in Brazil and India

Chakravorty, Tapan and Basilici, Giorgio

Tectonostratigraphic evolution of the Sonakhan Greenstone Belt

Patranobis Deb, Sarbani and Mazumdar, Tuasha

Study of diversity, ecology, and paleobiogeography of the Triassic, Jurassic and Miocene fauna. The fauna includes both vertebrates and invertebrates (chiefly gastropods)

Sengupta, Dhurjati Prasad, Bandyopadhyaay, Saswati, De, Chandreyee, Das, Shiladri Sekhar and Das, Sandip

Research Activities

Sedimentary record of the Triassic - Jurassic fluvial to lacustrine transition in a continental rift basin and signatures of microbial activity in a Late Triassic

Ghosh, Parthasarathi and Goswami, Suparna

Morphometric studies of fossil vertebrates

Sengupta, Dhurjati Prasad and Chakravorti, Sanjukta

Bannerjee, Amlan

The sedimentology and stratigraphy of the Siwalik succession

Chakraborty, Tapan, Mallick, Shuvra and Debnath, Arijit

Physics and Applied Mathematics Unit, Kolkata

The main areas of research in Physics & Applied Mathematics Unit are Theoretical Physics and Applied Mathematics. Additionally, some experimental work is also being done in the Fluvial Mechanics Laboratory of this Unit.

In a nutshell, the Scientists of the Physics & Applied Mathematics Unit (PAMU) of the Institute have been working in the areas of Astrophysics & Data Analysis, Astro-Optics, Condensed Matter Physics, Cosmology and Astroparticle Physics, High Energy Physics, Mesoscopic Physics and Nano-electronics, Quantum Field Theory, Quantum Information Theory, Quantum Mechanics, Nonlinear Dynamical Systems, Sediment-fluid Interactions and Flow Visualization. There is an externally funded new project on Synchronization, clustering and death in Networks of Complex systems (Theory and Application to Biology and Neurophysiology).

A brief account of the specific research work done by the members of PAMU during the year 2017-18 is given below:

PHYSICS

Biological Optics

Roy, A.K. and Sharma, S.K.

Cosmology and Astroparticle Physics

Chandra, D., Pinhero, T., Naskar, A., Choudury, S., Banerjee, A., Mitra, A., Pal, B. K., Alam, U., Bhattacharyya, A., Das, S., Pandey, K. L., Chatterjee, A., Paul, A., Ghoshal, A. and Pal, S

Quantum nonlocality and measurement incompatibility

Kar, G., Bandyopadhyay, S., Ghosh, S., Banik, M. Bhattacharya, S. S, Mukherjee, A. and Roy, A.

Quantum Thermodynamics

Parashar Preeti, Guha, Tamal, and Alimuddin Mir

Theoretical Fluid Dynamics and Cosmology:

- **Cosmological applications related to structure formation from Noncommutative corrections in fluid dynamics has been explored.**
- **Cosmological applications related to generation of in-homogeneities and averaging prescriptions from Noncommutative corrections in fluid dynamics has been explored.**

- **Multiple Central Extensions of Galleili group and other properties of Noncommulative fluid in 3+1-dimensions have been studied.**

- **Generation of a cyclic evolutionary universe with small Cosmological constant in Noncommutative Cosmology.**

Ghosh, S., Banerjee, R., A.K., Das, P., Pan, S. and Pal, P.

High Energy Physics:

Study of spin-2 models in 2+1-dimensions with effect of non-commutative black hole in bulk metric ton boundary holographic superconductor has been analysed and extension of this model in presence of magnetic field has also been investigated

Dalmazi, D., Santos, A.L.R dos, Ghosh, S., Mendonca, E.L., Pramanik S. and Das, S.

General Theory of Relativity:

Charged particle dynamics in Reissner-Nordstrom space-time is studied in Jacobi metric formalism

Ghosh, S., Das, P. and Sk., Ripon

Quantum Mechanics:

- **Zero energy states in graphene have been obtained for a large number of electric fields. Magnetic confinement in graphene using finite magnetic fields has been studied**

- **Higher order standard and confluent super-symmetric partners of generalized quantum nonlinear oscillator have been obtained focusing on regular potentials and spectral modifications**

Roy, P., Roy, B., Nath, D. and Schulze Halberg, A.

Engineering routes for efficient thermoelectric energy conversion at nano-scale level

Chakraborty, S. and Maiti, S.K

Phonon transport

Maiti, S K

Molecular spintronics

Patra, M. and Maiti, S.K

Electron transport in interacting quantum systems

Roy, S., Saha, M. and Maiti, S.K.

Thin Topological Insulator

Siu, Z.B., Chowdhury, D. and Basu, B.

Weyl Semimetal

Menon, A., Chowdhury, D. and Basu, B.

APPLIED MATHEMATICS

Existence and Global stability analysis of chimera states:

Research Activities

The robustness of chimera states together with incoherent and coherent states in dependence on the initial conditions has been discussed using basin stability method

Ghosh, D., Perc, M., Lakshmanan, M., Osipov, G. V., Parmananda, P., Dana, S.K., Bera, B. K., Majhi, S., Rakshit, S. and Kundu, S.

Synchronization in temporal networks:

Intralayer and interlayer synchronization in time-varying multiplex network where the intralayer coupling interactions are switched stochastically with a characteristic frequency was explored

Ghosh, D., Sinha, S., Majhi, S., Rakshit, S. and Bera, B.K.

Nonlinear waves:

Nonlinear coherent structures, namely bright-dark and dark-dark solitons are obtained in a general coupled nonlinear Schrodinger equation with complex potentials admitting PT symmetry

Roy, B., Nath, D., Gao, Y., Babu-Mareeswaran, R. and Kanna, T.

EXPERIMENTAL RESEARCH - Fluvial Mechanics Laboratory

Experiments were done in the flume in Fluvial Mechanics Laboratory, ISI, to study turbulence characteristics due to combined wave-current flows over an obstacle or a sand bed, when the waves propagated against the flow with wave-blocking condition (i.e. the fluid (water) velocity equaled the group velocity of the wave). Differences in the nature of ripples on the sand bed at three distinct zones, fluid flow dominated, wave-blocking dominated and wave dominated zones, were analyzed

Chatterjee, D., Mazumder, B.S. and Ghosh, S.

A number of experiments were conducted in the laboratory flume over 2-D fixed rough dune. Two types of beds were used for study over isolated dune and a seires of dunes. The time and double-averaging methodologies will be used for the analyses of experimental data

Sarkar, S.

Fluid Dynamics:

Turbulence characteristics of wave-blocking phenomena have been explored in Fluvial Mechanics Laboratory

Chatterjee, D., Mazumder, B.S. and Ghosh, S.

Biological Sciences Division

Agricultural and Ecological Research Unit runs several research projects covering the areas of Agriculture, Ecology, Nano Science, Plant Biotechnology, Biochemistry and Statistical and Mathematical modelling. In Agriculture, emphasis is given on Agronomy, Soil Chemistry, Soil Microbiology and Entomology. In Agronomy several trials are being carried out on cereals, legumes and vegetables in the fields and soils and plant samples are analyzed in the laboratory for several physical and chemical parameters. Scientists are working on projects pertaining to useful implication of nano science in the field of fertilizers and pesticides. Ecology is another major thrust areas of work. Scientists are working on invasive alien plant biology and their distribution along with their association and competition with other useful local plants. Extraction of eco-friendly edible oils as well as bio fuels from some plants are also part of the ecological researches that are being carried out in the Unit. Statistical and Mathematical modelling covers vast areas of interest to the researchers of the Unit

Biological Anthropology Unit conducted bio-anthropological researches on bio-cultural determinants of: (a) Physical growth and development including secular trend; (b) Health and well-being of various occupational groups; (c) Aging and senescence with reference to health of slum dwelling elderly women and also (d) Health and well-being studies on Alzheimer's caregivers in Kolkata and its surroundings. The Unit has six research scholars; they are working on their own topics of research and collecting data from individuals of the respective area with the active supervision of respective supervisors .

The focus of research in the Human Genetics Unit is to understand the genomic and environmental contributions to common diseases in India.

Epigenetic studies of oral cancer:
Genome-wide CpG methylation confirmed the abnormal and dynamic variations in CpG promoters in various cancer genomes. They also revealed that the CpG methylation status (either hypo or hyper) of promoters affected the expression of protein coding genes and various noncoding RNAs. Oral squamous cell carcinoma (OSCC) is one of the common malignancies in Southeast Asia. Epigenetic changes, mainly the altered DNA methylation, have been implicated in many cancers. Genome-wide DNA methylation analysis identified several novel differentially methylated regions associated with OSCC. Study identified a unique set of hypomethylated regions, enriched in the promoters of immune response genes, and indicated the presence of a strong immune component in the tumor microenvironment.

Genetic and epigenetic studies on Psoriasis:
Several studies suggested psoriasis to be a complex multifactorial genetic disease, but the exact triggering factor is yet to be determined. Findings of the study suggested the association of IL12B with the psoriasis, however no evidence was observed for the epistatic effect of IL12B with HLA-Cw6 among the psoriasis patients in India.

Statistical Genomics:
The focus of these studies is to critically analyze existing statistical methodologies and to develop new methodologies for human genetics, especially for gene-mapping and genotype-environment interactions.

Agricultural and Ecological Research Unit, Kolkata

Fantastic yields in the system of rice intensification: fact or fallacy?

Banik, P.

Invasive alien species – a friend or a foe?

Dewanji, A., Jha, P., Chatterjee, S., Bhattacharya, S. and Dewanji, A. (ASU)

Development of natural food preservatives from spices and herbs

Chattopadhyay, R.R.

Host-parasite interaction between the rice root knot nematode (*Meloidogyne graminicola*) and rice

Mukherjee, A.

Utilization of Brick factory coal ash and fly ash through application of vermitechnology

Bhattacharyya, P.

Biochemical and physiological portrayal of Darjeeling tea cultivars towards the selection of superior clones against abiotic stress

Das, S.

Exploring Potential of Sweet Sorghum (*Sorghum bicolor* L.) for Bio-Ethanol Production in West Bengal

Barik, S.

Evolution of Model Specific Relative Growth Rate with application to biological data

Bhattacharya,S**.,** Mukhopadhyay,S.,Bhowmick,A.R. and Yeasmin,F.

Does the generalized mean have the potential to control outliers?

Mukhopadhyay, S. Basu, A.N. (ISRU), Chattopadhyay, A, and Bhattacharya, S.

Modelling of Growth Profile of Chaetoceros sp. and its Steady State Behavior with Change in Initial Inoculum Size

Bhattacharya, S., Kundu,S., Mukherjee,J., Basu,S., Chattopadhyay, J. and Roy,S.

.

***Sterculiafoetida,* L.–Eco-friendly, cost effective and rich sources of nutritious edible oil, animal food supplements as well as biofuel and its multimodal application to environmental perspectives**

Mandal Biswas, S.

Management Practices for growth, yield and quality of maize (*Zea mays* L)

Adhikary, S.

Modulation and demodulation of photosynthesis using micro-nutrient nanoparticles

Mitra, S., Barik, S. and Goswami, A.

Utilization of naturally occurring nanomaterials for restructuring root systems

Barik, S. and Goswami, A.

Enhancing growth of beneficial gut bacteria with oxide nanoparticles

Barik, S. and Goswami, A.

Biological Anthropology Unit, Kolkata

A Study on mental health and well-being of dementia caregivers in urban areas of West Bengal

Mukhopadhyay, S. and Basu, I.

Burden of frailty: A study on community dwelling rural elderly population in West Bengal

Mukhopadhyay, S. and Das, S.

Human Genetics Unit, Kolkata

Whole exome somatic mutation analysis in oral cancer and adjacent leukoplakia tissues: A study to understand progression of oral leukoplakia to cancer

Roy, B.

Genetic Mapping of rare variants, multivariate and longitudinal phenotypes

Ghosh, S.

On integrating several data sources in genetic association study

Mukhopadhyay, I.

Role of epigenetics in psoriasis: Identification of DNA methylation biomarker

Chatterjee, R.

Social Sciences Division

The Social Sciences Division consists of eight units spread over Kolkata, Giridih, Delhi and Bangalore. These are: Economic Research Unit (Kolkata), Linguistic research Unit (Kolkata), Population Studies Unit (Kolkata), Psychology research Unit (Kolkata), Sampling and Official Statistics Unit (Kolkata), Sociological Research Unit (Kolkata and Giridih), Economics and Planning Unit (Delhi) and Economic Analysis Unit (Bangalore).

The scientific workers of these units are extensively involved in research, teaching, consultancy, editorial work, externally and internally funded project works and academic administration. Research is carried out both at individual and collaborative/interdisciplinary levels. The faculty members are also providing guidance to the Research Fellows. Training programs/ workshops are organized on a regular basis for non-ISI research fellows, college teachers and ISS probationers at different centres and at universities in the Northeastern region of India.

Economic Research Unit, Kolkata

The scientific workers of the Unit are extensively involved in research, teaching, training, consultancy and academic administration. The research is carried out both at individual and collaborative/ interdisciplinary levels. These include theoretical as well as empirical research in economics and econometrics.
The details of the applied and theoretical researches in Economic Research Unit are given below:

Experimental Analysis of decision under uncertainty, decision under deadlines, decision under peer effects.

Banerjee, Priyodorshi

Pro-poorness Orderings

Chakravarty, Satya R., Chattopadhyay, Nachiketa and D'Ambrosio Conchita

Poverty, Social Exclusion and Stochastic Dominance

Chakravarty, Satya R.

Ethnic Conflict

Dasgupta, Indraneel and Bakshi, Dripto

Linguistic Conflict and Linguistic Justice

Dasgupta, Indraneel and Guha- Neogi, Ranajoy

Outsourcing under Incomplete Information

Kabiraj, Tarun and Sinha, Uday Bhanu

R&D in a Duopoly under Incomplete Information

Chatterjee, Rittwik, Chattopadhyay, Srobonti and Kabiraj, Tarun

Balanced Implementability of Sequencing Rules, Identification of Sequencing Rules That are Implementable with Balanced Transfers in a Sequencing Problem

Mitra, Manipushpak and De, Parikshit

Subsistence, Saturation and Irrelevance in Preferences, Identifying Key Properties of Subsistence and Saturation and its Link to Irrelevances in Preferences of a Consumer

Mitra, Manipushpak and Sen, Debapriya

Equilibrium Co-Existence of Public and Private Firms and the Plausibility of Price Competition. Showing the Equilibrium Co-Existence of Fully Public and Fully Private Firms in a Differentiated Product Duopoly Framework with General Demand Conditions

Mitra, Manipushpak, Pal, Rupayan, Paul, Arindam and Sharada P.M.

Egalitarianism in the Queueing Problem. Identifying the Lorenz Optimal Allocation Rules from Three Different Classes of Fair and Pasreto Efficient Rules and Then Making a Comparison between These Three Rules Using Lorenz Domination and Rawlsian Minmax and Maximin Criterion

Mitra, Manipushpak, Youngsub Chun and Suresh Mutuswami

Naive Lexicographic Preferences over Attributes. Characterizing Lexicographic Preferences When Preferences May Not Be Rational

Mitra, Manipushpak, Goswami, Mridu Prabal and Sen, Debapriya

Endogenous Conjectural Variations, Showing a Strong Equivalence Result with Price and Quantity Competition when Conjectural Variations are Endogenous

Mitra, Manipushpak, Ghosh, Arghya and Paul, Arindam

- **Equilibria In Strategic Market Games.Identifying Equilibrium Conditions For Shapleyshubik Strategic Market Games**
- **Testable Restrictions of Equilibrium Outcomes in Strategic Market Games. Identifying Conditions on Individual Preferences Under Which Any Observation of Trading Decisions in The Shapley-Shubik Strategic Market Game Can Be Justified As An Equilibrium Outcome**

  Mitra, Manipushpak, Ray, Indrajit and Roy, Souvik

Dynamic VCG Mechanisms in Queueing. Identifying Dynamic (Or Online) VCG Mechanisms and Also Addressing the Budget Balance Issue

Mitra, Manipushpak, Ghosh, Sambuddha and Long, Yan

Generalized Measures of Diversity, Lower and Upper Bounds of Poverty Line, Causes and effects of television watching on childhood obesity, Issues on Health and Healthcare in India, Methods for Assessing Overweight and Obesity

Pal, Monoranjan

Nonlinear Models to Study the Effect of Inflation on Inflation Uncertainty in OECD Countries

Banik Chowdhury, Kushal (Tezpur ISI) and Sarkar, Nityananda

Study of the Relationship between Stock Returns and REIT Returns

Das, Mahamitra and Sarkar, Nityananda

Effects of Demonetisation on Financial Sectors of India: A VAR Approach

Sarkar, Nityananda and Mukhopadhyay, Debabrata

Gender Bias in Education, Intra-household Allocation Models

Majumder, Amita and Mitra, Chayanika

Purchasing Power Parity, Cross Country Studies, Poverty, Inequality, Welfare

Majumder, Amita, Ray, Ranjan and Santra, Sattwik

Applied Demand Analysis (Parametric and Semiparametric Models), Commodity Taxation.

Majumder, Amita, Chakrabarty, Manisha, Ray, Ranjan and Santra, Sattwik

Linguistic Research Unit, Kolkata

During the period (April 2017 - March 2018) the *Linguistic Research Unit* of the Institute is engaged in research activities in the areas of *Cognitive Linguistics, Corpus Linguistics, Computational Linguistics, Language Technology, Sociolinguistics, Field Linguistics and Descriptive Linguistics.*

- **Substantivist Lexicological Study of Bangla**
- **Interlexical Study of Asamiya in a Substantivist Framework**
- **Sociolinguistics**.

Dasgupta, Probal

- **POS Tagset Generation for Bangla Text Corpus**
- **POS Tagged Hindi-Bangla Parallel Translation Corpus**
- **Chunked Hindi-Bangla Parallel Translation Corpus**
- **Bangla Web Text Corpus Generation**
- **Corpus of Indian English used in Newspapers (From Newspapers)**
- **Bangla Pronunciation Dictionary in Electronic Form**
- **Corpus-Based English Language Teaching (C-BELT) System**
- **Generation of a Lexical Database of Transliterated English Words in Bangla Corpus**
- **Generation of a Lexical Database of Pronominal Forms in Bangla Corpus**

Dash, Niladri Sekhar

Population Studies Unit, Kolkata

Faculty and Scientific workers of this unit are involved in various teaching, training and research activities. This unit is also contributing in teaching in ISEC Courses in regular as well as specialization in Demography. Some collaborative research projects with other units are undertaken. During the year, the members of the unit published papers in journals and books, and participated as a speaker or resource person in national and international seminars, conferences and workshops. The following are the list of topics of major research being carried out by the unit during the year.

- **An Appropriate Statistical Method for Analysing Determinants of Fertility and Their Roles in Indian Context**
- **Determinants of Population Growth at Household Level – A Case Study Giridih District of Jharkhand**

Pathak, **Prasanta**

- **Inequality in Childhood Immunization in India during 1992/93 - 2005/06: A Causal Analysis Approach**
- **Gender disparity in socio-economic status of the children across the states in India during 1992-2006**
- **Gender disparity in curative health care utilization among the under 5 children in India during 1992-2006: A causal analysis approach**
- **Inequalities in health care infrastructural facilities and access to health care services across the states in India**

Barman, Subhash

Socio-economic Inequality of Child Immunization in the Eastern and North-Eastern States of India

Barman, Subhash and De, Partha

- **Trends in components of under-five mortality in Indian major states**

Research Activities

- **Evaluating the performance of health care systems across states and their correlates for their inefficiency and backwardness using Nonparametric Data Envelope Model**
- **A study of knowledge, attitudes and practices (KAP) of families toward their children with developmental challenges**

De, Partha

Psychology Research Unit, Kolkata

Faculty members and research fellows of the Psychology Research Unit are engaged in teaching, research and training in the following specific areas: construction of violence checklist, acquisition of Spatial frames of references, self-care efficacy in diabetes management, a study on metamemory and working memory among school-going adolescents, value profile convergence and divergence in obsessive compulsive disorder and somatoform disorder. Besides this, the unit provides course work on data visualization to the Post Graduate Psychology students of the University of Calcutta. Some Ph.D. scholars of the University of Calcutta have received the academic support from the unit.

Safe school Survey

Dutta Roy, D. and Sharma, Shubhangi

Association of Visuospatial Reasoning Abilities and Home Environment

Dutta Roy, D. and Datta, Sumona

Self-care Efficacy in Diabetes Management:

Dutta Roy, D. and Adhikari, Sravanti

A Study on Metamemory and Working Memory Among School-Going Adolescents

Dutta Roy, D. and Khatoon, Murshida

Cognitive Factors in Suicide

Chatterjee, G. and Karmakar, Sabornee

- **South Asian Face Database**
- **The Cognitive Architecture of Face-Processing – Understanding the Separation of Information Streams**
- **Human Face and Body Skin Tone and Their Relationship with Various Biological and Social Parameters**.

Chatterjee, G. and Chakraborty, Neloy

Effect of Internet of Brain Structure

Chatterjee, G., Ghosh, Priyanka, Kanai, Ryota and Datta, Himadri

Studying the Phenomenon of Disgust with reference to Genetic Contribution using Twins

Chatterjee, G. and Singh, Dhairyya

Academic Stress and Counselling Among Higher Secondary Students of Kolkata

Bhattacharya, Himani

Sampling and Official Statistics Unit, Kolkata

The topics of research of this unit is are follows:

- **Distributive Impacts of Loans to Finance Smallholder Agriculture**

- **Clientelistic Politics and Agent-Intermediated Lending: How Political Agents Use Targeted Loans to Influence Vote Shares**
- **Market Structure and Middleman Margins in Potato Markets in West Bengal: Evidence from Trader Surveys:**
- **Assessing the Relative Importance of Information and Credit Constraints: An Empirical Study of Agricultural Sales**

Mitra, Sandip, Visaria, Sujata, Mookherjee, Dilip and Maitra, Pushkar

Resource Transfers to Local Governments: Political Manipulation and Voting Patterns in West Bengal

Mitra, Sandip, Bardhan, Pranab, Mookherjee, Dilip and Nath, Anusha

- **Assessing the factors that affect the health status of M.Sc Second Year students of Kalyani University using Ordinal Logistic Regression analysis. M.Sc.(Stat.) Project, Kalyani University (2017)**
- **Poisson regression on Count Data. M.Sc.(Stat.) Project, Kalyani University (2017)**
- **Estimating Sensitive Population Parameters, Protection of Privacy in Randomized Response Techniques, Determination of Robust Optimum Plot Size and Shape in Agricultural Statistics**
- **Estimating Sensitive Population Proportion By a Three-Stage Forced Response Model**
- **Protection of Respondent's Privacy in Estimating Sensitive Population Proportion By Hypergeometric Randomized Response Model**

Dihidar, Kajal

Respondent Privacy in Randomized Response Surveys for Continuous Sensitive Variables

Dihidar, Kajal and Bose, Mausumi (ASU)

On The Robust Estimation of Optimum Size of Plots and Estimation of Data-Dispersion Matrix Under Complex Spatial Structure Prevalent in Field Experiments

Dihidar, Kajal and Pal Satyabrata

- **Assessment of the Socio-Economic Impact of National Highway 6**
- **Development and Application of a Concurrent Impact Evaluation Method of The Foreign Trade Policy of India (FTP) 2015-2020**
- **Development of Test Analytic Framework for Multiple Choice Type Online Tests**

Chakraborty, Asit Baran and Others

Reviewing NSS Sampling Design for Household Surveys in Rural Areas

Kar, Aloke

- **Developing an Appropriate Structure Preserving Estimation (SPREE) Method for Estimating Domain-Level Aggregates from NSSO Household Surveys**
- **Developing an Appropriate Methodology for Estimating Proportion of Villages with Specific Infrastructural Facility**

Kar, Aloke and Others

- **Examining Why a Reference Period of "Last Week" In Consumer Expenditure Surveys Gives Higher Estimates Than a Reference Period of "Last Month"**
- **Examining To What Extent Values of Consumption Reported in NSS Consumer Expenditure Surveys are Derived By Multiplying Reported Quantity By A Price**
- **Influence of Reporting Behaviour and Reporting Biases on Consumer Expenditure Survey Data**

Chaudhury, Prabir

Sociological Research Unit, Kolkata

Teaching in Sociology inside and outside ISI are being carried out by members of the Unit. Courses are taught to students of B. Stat 3rd year and of the Post Graduate Diploma in Computer Applications (PGDCA) Course at Giridih. In addition, two Ph.D. students of the Unit (one at Kolkata and other at Giridih) are being supervised.

Researches are being carried out on the following topics:

Small-marginal landholders' farming and livelihood issues: A study in Jharkhand
Behera, Hari Charan and Pal, Indrajit

Agrarian Questions under Neoliberal Economic Policies in India: A Review and Analysis of Dispossession and Depeasantisation
Rao, P.V. and Behera, Hari Charan

Effect of Socio-economic and Demographic Factors on Nutritional Status of Indian Post-adolescent Teenagers: A Set Theoretic Approach
Shome, Suparna, Adak, Dipak Kumar, Pal, Manoranjan (ERU), Hossain, Golam and Bharati, Premananda

Women's Decision Making Autonomy and its Influence on Nutritional Health in India: A North-South Regional Comparison
Sahoo, D., Shome, Suparna, Pal, Manoranjan (ERU) and Bharati, Premananda

Influence of maternal autonomy and socioeconomic factors on birth weight of infants in India
Shome, Suparna, Pal, Manoranjan (ERU) and Bharati, Premananda

Influence of Socio-Economic Status and Television Watching on Childhood obesity in Kolkata
Bharati, Susmita, Pal, Manoranjan (ERU), Shome, Suparna; Roy, P., Dhara, P. and Bharati, Premananda

Assessing Overweight among Children Aged 6-10 Years in Kolkata, India
Bharati, Susmita, Pal, Manoranjan (ERU), Hossain, M.G. and Bharati, Premananda

Contribution of different anthropometric measures to BMI towards assessing overweight & obesity of (6-10 year) children in Kolkata, India
Pal, Manoranjan, Bharati, Premananda and Bharati, Susmita

Growth and Nutritional Status among Pre-adolescent and adolescent Bengali boys and girls in North 24 Parganas, West Bengal, India
S. Banerjee; S. Biswas, Bharati, Susmita, Pal, Manoranjan (ERU), and Bharati, Premananda

Social Network Analysis in the Context of Community Response to Disaster
Goswami, Rupak, Misra, Sanchayeeta, Mandal, Tandra and Jana, Rabindranath

Economics and Planning Unit, Delhi

The Economics and Planning Unit faculty continues to work on the cutting edge of economic research, both in theory, as well as empirical analysis.

Recent works in mechanism design and auction theory have focused on stability of matching rules for teams, implementation via undominated strategies in bounded mechanisms, design of auctions with

non-quasi-linear preferences, and contract design for behavioural agents who use multiple rationales to make decisions. Research in contract theory has involved rewarding talents in organisations, and lender competition. Research in agriculture economics has looked at welfare effects of price supports, risk sharing in world food markets, and basis risk in agricultural insurance. In environment economics research has focused on air pollution, and social costs of power from coal and renewables. Research on education has looked at returns to STEM, teacher transfers, internal migration for education, improving learning outcomes through information, school feeding programs, impact of education loans on higher education, and gender peer effects in high schools. Research in caste has explored social connections and financial incentives in India's manufacturing sector, and the relationship between inter caste marriage and education. In health economics research has focused on estimating neonatal mortality rate, gender discrimination in a tertiary care hospital, and optimal utilisation of resources and ranking of the district hospitals across India. Researchers have also worked on the impact of electronic voting machines on democracy and development, and on the impact of land reforms on property rights and financial development. In theoretical macroeconomics researchers have worked on the annuity role of estate tax, progressive benefits of social security (pension), education pension dependency, and optimal intergenerational transfers. Research in empirical macroeconomics has focused on monetary transmission in India, impact of fiscal austerity on macroeconomic outcomes of emerging market economies, and the effects of targeted government employment programs on labor market outcomes.

Below is a more detailed breakdown of research interests by faculty members:

- **Improving Learning Outcomes through Information: Experimental Evidence from India**
- **Social Connections and Financial Incentives: A Quasi-field Experiment in India's Manufacturing Sector and School Feeding Programs and Classroom Performance**

Afridi, Farzana

- **A Revisit to the Annuity Role of Estate Tax**
- **Social Security (pension): Progressive Benefits but Regressive Outcome?**
- **Education Pension dependency**

Bishnu, Monisankar

Organizational Structure, whether Talent is rewarded in an Organization

Roy Chowdhury, Prabal and Bag, Parimal

Examining the Effect of Lender Competition in the Presence of Collusion between Borrowers and Bank Officers

Roy Chowdhury, Prabal and Dam, Kanishka

Examining the Effect of Productivity Shocks on Marriage Market Institutions

Roy Chowdhury, Prabal and Chowdhury, Shyamal

NK - DSGE Model to Understand Monetary Transmission in India

Ghate, Chetan (in collaboration with the banking sector)

- **Small Open Economy – Real Business Cycle Models (SOE-RBC): The Impact of Fiscal Austerity on Macroeconomic Outcomes in Emerging Market Economies**
- **Effects of Targeted Government Employment Programs on Labour Market Outcomes in Developing Economies Using A Search and Matching Friction Framework**

Ghate, Chetan

- **Missing Female Patients: An Analysis of Gender Discrimination in A Tertiary Care Hospital in India, 2016**

Research Activities

- **The Impact of Electronic Voting Machines on Democracy and Development (Paper Was Cited in The Parliamentary Debate By Union Minister Ravi Shankar Prasad)**
- **Estimating Neo Natal Mortality Rate at the Sub Regional Level for India: A Bayesian Approach**
- **Using Data and Analytics to Advise NITI Aayog for Optimal Utilization of Resources and Ranking of The District Hospitals Across India**

Kapoor, Mudit

- **Design of Auctions in Environments Where Preferences of Agents Need Not Satisfy Quasilinearity Assumption: Applications include Budget Constrained Bidders In Auctions**
- **Contract Design For Behavioral Agents Who Use Multiple Rationales to Make Decisions**

Mishra, Debasis

- **Returns to STEM**
- **Teacher Transfers**
- **Internal Migration for Education**

Mukhopadhyay, Abhiroop

- **Welfare effects of price supports**
- **Risk Sharing in World Food Markets**
- **Basis Risk in Agricultural Insurance**

Ramaswami, Bharat

Matching Theory and Mechanism Design Theory: On The Stability of Matching Rules For Teams And Implementation via Undominated Strategies In Bounded Mechanisms

Sen, Arunava

- **The Effect of Electric Induction Stove Use on Air Pollution**
- **The Social Costs of Power from Coal and Renewables**

Somanathan, E.

- **Optimal Intergenerational Transfers and the Rise and Fall of Pay-As-You-Go Pensions**
- **Land Reforms, Property Rights and Financial Development**
- **Who's Education Matters? An Analysis of Inter Caste Marriages in India**
- **Impact of Education Loans on Higher Education: The Indian Experience**
- **Gender Peer Effects in High Schools: Evidence from India**

Ray, Tridip

Economic Analysis Unit, Bangalore

Economic Analysis Unit (Bangalore) is engaged in research on Climate change and agricultural yields, Livelihoods and human development in Tripura, Small Farmers in India and research on women workers of coffee industry.

- **Research on Livelihoods and human development in Tripura**
- **Small Farmers in India: Evidence from Village Studies: analysis of data on production, production systems and livelihoods, and the socio-economic characteristics of different strata of the rural population.**

Swaminathan, Madhura and Ramachandran, V.K.

Research on women workers of coffee industry using primary survey and secondary sources: Gender division of labour and forms of production of coffee plantation workers

Chattopadhyay, Molly and Pais, Jesim

Evaluation of gender gap in official statistics relating to the number of women workers in India: Case studies in rice farming, livestock economy and plantation sectors

Chattopadhyay, Molly, Niyati, S. and Vijayamba, R

Statistical Quality Control and Operations Research Division

The Division comprises of eight SQC & OR Units located at Bangalore, Chennai, Coimbatore, Delhi, Hyderabad, Kolkata, Mumbai and Pune and the Central SQC (CSQC) Office located in the main campus at Baranagore which co-ordinates the activities of the Division. The Division presently has 39 Faculty Members at different levels and designations.

The scientific workers of the Division are extensively involved in research, teaching, consultancy (with a special emphasis to enhance Quality and Productivity), editorial work, externally and internally funded project works and academic administration. The uniqueness of the Division is in carrying out research in application areas and disseminating Statistical Knowledge to a large section of the industry, and thus helping the country in enhancing Quality and Productivity of goods and services.

Research is carried out both at individual and collaborative/interdisciplinary levels. Training programs/ workshops are organized on a regular basis.

The Division is instrumental in running the following Academic Programmes:
- M.Tech. (QROR) programme at Kolkata;
- M.S. (QMS) programme at Bangalore and Hyderabad;
- Part-Time Certificate Course in SQC at Bangalore and
- Part-Time Certificate Course in SQC at Hyderabad.

The faculty members of the division also teach in other academic programmes like B.Stat., M.Stat. (both Kolkata and Chennai), M.S. (LIS) (Bangalore). They also supervise Ph.D. theses and Dissertation and Project work of M.Tech. (QROR), M.S. (QMS) and M.Stat. students.

Some of the main thrust areas of research of the Division during this period are: Generalized Positive Subdefinite Matrices and Interior Point Algorithm, Progressive type-I interval censoring with random removal; Process Capability Indices; Fuzzy Optimization Approach for Software Reliability Estimation; Mathematical Programming; Control Charts; Linear Complementarity Problem (LCP) and its generalizations, Optimization problem in graph theory, and Multivariate Statistical Process Control.

The scientific workers of the Division published more than 32 papers in reputed international and national journals and colleagues also contributed towards editorial activities of monographs and journals.

Apart from the usual Industrial/Organisational consultancy projects, the Division has also taken up some very interesting and useful projects of National Importance like

i. Impact on Noise Quality due to Highway and Infrastructure Development
ii. Problems and Prospects of Tea Industry in India
iii. Reduction of Fatalities due to Road Accidents
iv. Improving Effectiveness of Swachh Bharat Mission – Urban
v. Improving Defence Production System
vi. Reducing the Lead Time in Product Development of Knitted Fabric Manufacturing
vii. Process Optimization for Reducing the Rework on the Wiper Arm Rod
viii. Developing a methodology to Normalise the scores of the students from Different Examination Boards,

The Division also caters to the needs of some of the industries abroad.

SQC and OR Unit, Kolkata

- **Finiteness of Criss-Cross Method in Complementarity Problem**
- **On the Convergence of an Iterative Method for Solving Linear Complementarity Problem with WGPSBD**
- **On existence results for some nonlinear system of equations**

Das, A.K., Jana, R. and Deepmala

- **Impact on Noise Quality due to Highway and Infrastructure Development**
- **Problems and Prospects of Tea Industry in India**

Mukhopadhyay, Arup Ranjan

- **Control Chart for Ordinal Data**
- **A Robust Multivariate Control Chart**

Das, Nandini

Assessing lifetime performance index of Weibull distributed products using progressive type II right censored samples

Dey, S., Sharma, V.K., Anis, M.Z. and Yadav, B.

Estimation of reliability of multicomponent stress-strength for a Kumaraswamy distribution

Dey, S., Mazucheli, S. and Anis, M.Z.

Some characterizations of exponential distribution

Ahsanullah, M. and Anis, M.Z.

Modeling Multistage Process Monitoring and Fault Detection Strategies under Partial and Imprecise Information

Das, P., Gauri, S.K. and Nath, S.

Bayes estimation of quality adjusted lifetime (QAL) distribution in illness-death model

Pradhan, Biswabrata and Roy, Soumya

Optimum warranty length under Type-II unified hybrid censoring scheme

Pradhan, Biswabrata, Sen, Tanmay, Bhattacharya, Ritwik and Tripathi, Yogesh Mani

Hybrid inspection plan for optimal availability

Chakraborty, Ashis Kumar and Sinha, Soumi

Reliability estimation of software at optimal stopping time

Chakraborty, Ashis Kumar and Panja, Arindam

Software Reliability Modelling

Chakraborty, Ashis Kumar and Chatterjee, Parna

Statistics and Machine learning

Chakraborty, Ashis Kumar and Chakraborty, Tanujit

Reduction of Fatalities due to Road Accidents

Bandyopadhyay, Amitava

Improving Effectiveness of Swachh Bharat Mission – Urban

Bandyopadhyay, Amitava, Manna, D.K., Sett, Ranjan, Biswas, Amit, and Sampangi Raman, D

Improving Defence Production System

Bandyopadhyay, Amitava, Sett, Ranjan, Das, Arup K., Gupta, Abhijit, Rao, G Murali and Murthy, A.L.N.

Integrated shift and drift control of a growth process

Mondal, P.

SQC and OR Unit, Delhi

- **Mathematical Programming**
- **Linear Complementarity Problem (LCP) and its generalizations**
- **Optimization problem in graph theory**
- **Matrix Theory (Study of Matrix Classes useful in Complementarity, Optimization and Game Theory)**
- **Non-cooperative games, Algorithms for Stochastic Games**.

Neogy, S.K.

- **Design of Experiments – Static Characteristics**
- **Dynamic Characteristics and Categorical Characteristics in a multi response processes**

Chakravorty, Rina

- **Mathematical Programming**
- **Matrix classes in Linear Complementarity Problem**
- **Game theory**

Dubey, Dipti

SQC and OR Unit, Bangalore

- **A study on Panel data regression of cross-sectional data that varies over time**

- **Study on Multivariate Time Series Analysis**

Chowdhury, K.K.

- **Development of a control chart procedure for detecting the impending termination of business process outsourced accounts**

- **Development of a slopping control chart methodology for simultaneously monitoring multiple characteristics**

- **Development of a methodology for simultaneous optimization of continuous and categorical characteristics**

- **A control chart for monitoring characteristics exhibiting nonlinear profile over time**

John, Boby

SQC and OR Unit, Coimbatore

<u>Textile Sector</u>

- **Reducing the Lead Time in Product Development of Knitted Fabric Manufacturing**

Research Activities

for JJ tex

- **Reducing the Workers Attrition rate using the statistical Diagnostics for Shiva Tex, a Textile Spinning Mill.**
- **Reducing the Internal Customer Complaint of small parts cell from Machine Shop in Lakshmi Machine Works(LMW)**

Automobiles Sector
- **Process Analytics for Reducing the Rework on the Fuel Indicator Rod from MSME to OEM**
- **Process Optimization for Reducing the Rework on the Wiper Arm Rod**

Software Sector
- **Capability in consistency of Clinical Information System of Electronic Medical Records(EMR) Company by using the Statistical Analysis**
- **Error reduction of Wrong Clinical Provider Name in a Multinational Health Care Record Company**

Health Care Sector
- **Enhancing the Probability of Salvaging of legs among Poly trauma Cases (Ganga Hospital) using Discriminate Analysis and Logistic regression**
- **Reduction of Re-Categorization Process of error encountered in EMR in a Multinational HealthCare Company.**

Infrastructure
- **Sensitivity of Cost of Production by Identifying Critical to Cost Parameter and Critical to Product Mix in a Rock Crusher Plant and introducing process design studies for M-Sand**
- **Business management System for Corporate Office on key Result Areas (KRA) on various projects sites from different locations.**
- **Developing Metric for day to day Management Information System**

Food Processing
- **Reduction of Flies and Pests in Kitchen Area**
- **Reduction of Plastics and Synthetic Materials found in the Cooking Space**
- **Economic Order Quantity of Stores and Control of Dispatching Materials**
- **Waste Segmentation and Disposal System**

Engineering Sector
- **Non-Conformance Reduction for the Flow Products – Machine Shop**
- **Honouring Delivery Schedules in Exports of Valve Trim Parts to Valve Manufactures for Oil & Gas Industries**
- **Reducing the Cost of Poor Quality by Minimizing the Pump Failure Service Cost Within Warranty (CRI Pumps)**
- **Optimisation of Setting up Time Reduction in CNC Versatile Spring Forming Machines**

Public Sector
- **100 Wards Analysis for Coimbatore Corporation To implement Swachh Bharat scheme a Gap analysis *with SMART solutions for SMART City Projects***
- **Rural Development Program- Solar Energy – Enhancing the Quality of Life (Malappuram, Chaliyar, Kerala)**

Education Sector
- **Educational Data mining for NEET exam**

Rajagopal, A.

SQC and OR Unit, Hyderabad

- **Linear Complementarity Problem**
- **Fuzzy Metric Spaces**
- **Decision Support Systems**
- **Six Sigma**
- **DOE**
- **SPC**
- **Text Data Mining**
- **Generalized Gaussian Distributions (GGD)**

Murthy, G.S.R., Murthy, A.L.N., Rao, G.M. and Subhani, S.M.

SQC and OR Unit, Mumbai

Multivariate Statistical Process Control

Sikder Sagar

Library, Documentation and Information Sciences Division

The Library, Documentation and Information Science Division comprises

- Central Library, Kolkata
- ISI Delhi Centre Library, Delhi
- ISI Bangalore Centre Library, Bangalore
- ISI Chennai Centre Library, Chennai
- ISI North-East Centre Library, Tezpur
- Prasanta Chandra Mahalanobis Memorial Museum and Archives, Kolkata

The Division is perhaps the most important central facility of the Institute.

Central Library, Kolkata

The Central Library occupies a unique place in academic and research activities of the Institute. The Central Library moved to its present location in 1978, and it occupies 5 floors (60000sq.ft) of a ten-storied building at Kolkata. The Central Library seeks to:

- Meet the informational, educational, recreational, and cultural interests and needs of the user community by providing timely access to print and non-print resources appropriate to those needs.
- Encourage and facilitate reading, literacy and lifelong learning by supplying resources in a variety of formats designed to interest, inform, and enlighten.
- Protect the public's right to know by providing equal access to information needed for informed and effective daily living, decision making, problem solving and thoughtful participation in civic/community affairs.
- Provide the highest quality service and to organize and display the collection for easy, open access by all.
- Maintain publication exchange programme of the Institute with regional, international, national, and foreign institutions and organizations.
- Continue to function as the Eastern Regional Library of the National Board of Higher Mathematics [NBHM], Department of Atomic Energy, Government of India since 1989.

Research Activities

Over the years, the ISI Central Library has attained the distinction of being one of the richest libraries in India in the areas of mathematics, statistics, economics, theoretical computer science and related areas. To achieve the goals of the Library, following activities were undertaken during the year under report:

Collection Development

The Library maintains an excellent collection of books, journals, reports, rare and special collection, government publications, data-books, theses and other documents/ materials in print and electronic formats. During the year under report, the library accessioned 589 printed books and 2230 e-books on statistics and mathematics (accessible among three centers via springer through IP ranges), 03 CDs and 02 books on project collection were purchased from ISI budget, while 50 books were received on complimentary basis. The Library also accessioned more than 1000 bound volumes of journals and subscribed to 150 scholarly journal titles in print. More than 30 journal titles were received as complimentary and 85 titles in exchange with Sankhya. The library received and processed more than 2000 loose issues of journals. It classified and catalogued 589 new books. It also procured and processed 150 titles which includes govt. Reports, Annual Reports, Data Books, Unit Level Data from census, NSSO and CSO (in CD's) on government reports/data-books etc. Beside this, the library has added a collection of 150 English books and 32 Bengali books and 2 Hindi books on literature, humanities, travel, health and recreation and 22 Daily Newspapers & Magazines in its Workers' Circulating Library.

E-Resources

The library has a good collection of electronic resources on different media and has access to several online journals/databases. During the year under report, the library has added approximately 2230 e-books, 10 CDs & DVDs containing books and CDs on statistical data. The library has provided the online access to about 22000+ full-text journals. It has renewed the online database like MathSciNet, Econlit with full text, Science Direct, Springer Link, T & F Journal online, Willy Inter Science, Oxford University Press Journals, CUP Journals, JSTOR through consortia. It has also subscribed to the IEL online of the IEEE/IEE publications, ACM Digital Library and Current Index to Statistics (CIS) on Web. The library has also subscribed to Census data, online database (CEIC data base) and statistical data sources (CMIE and India Stat. com) available through IP's and/or password based to provide data services to its potential users.

Publications Exchange Programme

The library maintains the publication exchange programme of 'Sankhya - the Indian Journal of Statistics' with 52 national and 23 international institutions/organizations. The 23 international agencies are from various countries of the world such as Bangladesh, Belgium, Brazil, Canada, China, Taiwan, Croatia, Czech Republic, Denmark, France, Hungary, Italy, Japan, Pakistan, Poland, Romania, Russia, Slovakia, Spain, Switzerland, Thailand, UK and USA. In exchange, the Library has received 85 titles during the reporting period.

Membership

Membership of the ISI-Library is restricted to persons with post-graduate or equivalent academic qualification and interest in the objectives of the Institute. Faculty members, research scholars, students, research associates, visiting scientists, ISEC trainees, project-linked staff, project assistants, ISI-employees, outside students and the Institute members are eligible for the membership of the Institute Library. However, they have to apply for the membership of the library and receive a bar-coded Library Card. During reporting period, library membership was given to 274 persons and 1022 readers were given special permission to use the library for a short period. Currently the total number of library member is 3406. Total number of members including staff, students and research scholars of the Institute is 960 in its Workers' Circulating Library.

Services

The ISI-Library, since its inception has been providing a variety of library and information services to its users. The services presently being provided include:

Web-OPAC: Members use this facility to browse and search the database to see the status of a document including their own transactions.

Lending/ Document Delivery Service: During this period 52850 books and other documents were issued to the user on loan and reference. Publications from Government of India and other International Organization and data CDs, were issued to users for reference purpose. It provided 4900 pages of reprint requests and 20000 pages in soft copy from different full text database /journals. It provided email-based reminder services like 7-day advance alert, long overdue notice and check-in information. The Workers' Circulating Library issued 2000 books for lending and reference during this period.

Inter-library loan: 05 Books were borrowed from other libraries, while 21 books were lent to other libraries.

Current Awareness Service: 12 monthly lists of current additions to the library were made available online.

Self-Photocopying Service: The library provided the Self-photocopying service in its periodical section, which was available everyday throughout the library hours. During this period 4000 pages were photocopied from the journals.

Electronic Document Delivery Service: Full-text articles and/or bibliographical data were provided through email from online resources. Besides electronic document delivery, 2000 pages of printouts were also supplied against demand.

Online Full-Text Access to Journals/ Database: During the period under review, the library has provided services from more than 22000+ online journals and major databases like MathSciNet, Econlit with full text, Science Direct, Springer Link, T & F Journal online, Willy Inter Science, Oxford university Press Journals, CUP Journals, JSTOR, IEEE/IEE publications, ACM Digital Library and Current Index to Statistics (CIS) on Web through consortia. The online access is available through campus-wide network.

Reprographic & Photographic Service: During the year, it provided around 409270 pages of photocopies, 662 graphic designs, 7901 scanned items, 3500+ pages of color and b/w pages of print outs, 18300 pages of color photocopies, and 966 spiral bindings. 853 pages were laminated. The Unit is developing a digital archival repository comprising of ISI's old documents like ISI council proceedings, library's accession register, administrative documents, old letters of ISI's distinguished persons etc. that are preserved in paper document and microfilm. 17650 frames of microfilm/fiche were digitized. The Unit has provided the Digital Photo Archive of ISI. It has digitized all rare photographs of ISI since its inception.

Documentation Service: A searchable bibliographic database has been prepared on scientific contributions made by the ISI scientists on all subject fields since 1934. The entries are currently being subjected to editing.

General Enquiry Assistance & Consultation Service: Assistance has been extended to 274 external visitors including participants of the Winter School, NBHM Nurture Programme, Summer Research School and visiting students of different institutions. During the reporting period orientation programme was given to the newly admitted students & research scholars.

Research Activities

Special Initiatives:

Consortia arrangements: It has completed binding of more than 1000 physical volumes of journals. Lamination and de-acidification of 16 rare books of 3500 pages were completed. 173 books were fumigated and rare and out-of-print books were scanned and photocopied.

Preservation and conservation: It has completed binding of more than 1000 physical volumes of journals. Lamination and de-acidification of 16 rare books of 3500 pages were completed. 173 books were fumigated and rare and out-of-print books were scanned and photocopied.

Institutional Repository (IR): A prototype of IR of ISI has been created. Currently it covers scientific writings of Professor P.C. Mahalanobis, full-text of 3000+ ISI research papers, full text of all convocation addresses, ISI Annual Report from 1933 to 2008 and 100 Ph.D. theses.

Digitization: 40 Monographs (books & reports) were digitized. These will be made available on the Web after the completion of the work.

Library, Delhi

Indian Statistical Institute, Delhi Centre, maintains an academic library, which aims to be a leading library in the fields of Economics, Mathematics, Statistics, Operations Research and Statistical Quality Control. The library caters mainly to the needs of bonafide students, scholars and staff of the Institute. However, it is also open for reference to academic and research users of other educational and scientific institutions of the city and its neighboring regions.

It is an automated library with an extensive collection of books, journals, CDs, reports, govt.publications and other documents in print and electronic formats. The ISI Delhi Centre library also act as one of the NBHM regional library of northern India and provides information resources to support academic and research activities in the areas of Mathematics, and allied subject areas. Some of the main activities of the library during the period under review were as under:

Collection Development

Books: The library accessioned 123 new books and 183 bound volumes during the year under report from the ISI and NBHM funds. The library also received 25 books as gift from different sources. Thus raising the current library stock both books and bound journals to 51907 volumes.

Journals: During the period under review 132 journals, both foreign as well as Indian have been renewed. 20 journals on gratis and 9 journals in exchange are being received in the library from various sources.

Online Resources: The library also participated consortia based subscription to electronic resources and provided users more than 700 full text electronic journals access including EconLit, SIAM e-journals, Current Index to Statistics, MathSciNet, Science@Direct, SpringerLink, J-STOR, , Wiley Journals, Cambridge Journals, Oxford Journals, Taylor & Francis, INFORMS, AMS, IMS, Sankhya and many others.

E-Books: Under the ISI consortia arrangement Springer e-books package a total of 2237 e-books access has been provided to users on statistics and mathematics subject.

CDs: The library has more than 580 CDs of different reference books and journals including databases.

Exchange Programme*:* Exchange program established with seven scientific institutions in the regions of China, Korea, Netherlands, Poland, Spain and Vietnam for getting their publications in exchange to our journal 'Sankhya'- Indian Journal of Statistics and "Texts and Readings in Mathematics" (book series).

Library Services

Circulation services: During the period April 1 2017 to March 31, 2018, total 167 members, availed the lending facilities as permanent members of the library, whereas more than 220 users availed reference facilities of the library. More than 3000 publications have been circulated among the members.

Reprographic services: During the period under review more than 2500 pages have been Xeroxed and made available to users of the library and outsiders. Xerox facilities were also provided to research scholars of neighboring institutes under NBHM programme.

Electronic document delivery service: In addition to Photocopy facilities, more than 1200 full-text articles (PDF files) were provided to the users.

Current awareness service: The following lists were brought out regularly from the Library:
- Monthly list of current periodicals
- New additions of books

Web-OPAC Facility: The users have been given *koha* Web OPAC access facilities on the Internet.

Web Enable Library Services: The library provides web enabled library service to users. The library web site contains information about the library its collection, services, rules, list of electronic journals, catalogues, databases, telephone directories, and online requisition forms etc. The contents of library web pages are regularly updated to serve the internal and external needs of users.

Union Catalogue of Serials: The Indian Statistical Institute Delhi Centre library has developed this Union Catalogue of Serials database with a view to promote the new improved access to journal holdings among the users. The database stored the serial holdings information of three ISI Libraries i.e. Kolkata, Delhi and Bangalore. The tool provides a web based central access point to all print and electronic journal holdings information and can be search under Journal title, Keywords, ISSN, Item types, Alphabetical browse (A-Z) or even Library wise serial holdings.

Library, Bangalore

Indian Statistical Institute Bangalore Centre Library is aiming to be identified as a model Library in the Indian Academic scenario. The Library is providing many modern Library Services using Internet and they are popularly known as Web based Information Services. ISI Bangalore Centre Library has also initiated interactive applications for its users. The Library has developed a very distinguished collection in different knowledge domains namely Mathematics, Statistics, Systems science, Information Science, Economics, Quality management and Operations Research, Library and Information Science, Computation and Artificial Intelligence and so on. Various services are designed to meet the Information needs of the Faculty members, Students, Research Scholars and Visiting Scientists. Walk-in users from other Research Institutes and Universities are also permitted to use the Library. The following activities were undertaken by the Library during the period April 2017 – March 2018:

Collection Development

The Library purchased 101 books, received 74 books as gift during this period. The Library subscribed to 153 journals titles, 6 journals titles were subscribed from NBHM grants. Additionally Library has

subscribed to “IEL ONLINE” giving access to journals and technical reports published by IEEE. The Library has 39 E-Books from World Scientific Publishing.

Library Collection: Total no. of books is 30,651 and bound volumes are 19607.

Membership: More than 160 registered users enjoyed the Library facilities and the services during the year. In addition, facilities were extended to around 380 walk-in users during this period.

Current Content Service: Content pages of around 1400 journals have been scanned.

Circulation Service: Around 6213 books and 360 journals were circulated during this period. 310 loose issues of journals were issued to users overnight.

Inter-library Loan Service: Due to good liaison amongst the local libraries, the library has been involving itself in providing Inter-library Loan Service.

Document Delivery Service: Under this service around 800 documents in pdf format were downloaded and supplied to the registered users.

Reprographic Service: During this period 21371 photocopies were supplied to the Library users.

Web based Library Services: The Library has devised various services using World Wide Web. They are all accessible at http://www.isibang.ac.in/library. Full-text online journals were accessed through this website. The Library also provides access to various abstracting and indexing services.

Library, Chennai

Academic Library for Indian Statistical Institute Chennai Centre (ISIC) was started in 2011 to cater to the information needs, adding to the existing library of SQC & OR unit, at Taramani. This evolving library aims to a vibrant collection in the fields of Statistics, Applied Statistics, Mathematics, Computer Science, Statistical Quality Control and Operation Research making it prototypical in functioning, administration and unique in collection. Various services are provided for an efficient usage of library facilities by the students, faculty members, visiting scientists and research scholars. Researchers from other institutions are offered reference service.

Collection Development

The Library maintains an excellent collection of books, journals, magazines, question papers, multimedia resources etc. From April 2017 till date, 155 books were added raising the collection to 3612 books. Library at SETS office was shifted and merged with ISI SQC & OR Unit library and the collected has increased above 5500. Around 21 International online journals and 10 magazines were subscribed. Further, during the reporting period Library received 526 books as donation by Prof. Sethuraman, Retired Professor from Indian Statistical Institute living in Florida, U.S.A.,

Technical Processing

Around 155 books were classified from April 2017 till date. Database entry in KOHA Library Automation software were updated in Z39.50 Standard bibliographic format for all the books. Web OPAC with accessibility and users’ details were updated in the library database. Other services like Inter-Library Loan, content service, reprography service and document delivery service are initiated.

Web based library services

It has remote access to more than 2000 e-journals accessible through ISI Kolkata Library procured under ISI Consortia.

Membership

ISIC library has restricted access to postgraduate students, research scholars, faculty members and visiting scientists totaling to around 35. Institutional Membership were renewed with Indian Institute of Technology, Madras (IITM) and Inter library Loan with other ISI Centers and Units were activated.

Library Services

Lending and document delivery service: Around 750 documents were delivered from April 2017 till date showing the active participation of the users. Automation of library with full setup of RFID was fully completed. Database was completed for ISI Chennai Centre Library, Taramani, SQC & OR Unit Library, Aminjikarai and ISI Chennai Centre Hostel library totaling to 5800 books. Full automation of library was completed.

Library, Tezpur

ISI N-E Centre Library started functioning from July 2011. The library aims to provide value services to its users by developing quality documents in the field of Statistics, Mathematics, Quantitative Economics and other allied subjects. The Library has good collection on the three main subjects. Further, it has limited collection in the fields of Computer Science, Soil Science, Library Science and Environmental Science etc. The ISI N-E Centre Library always tries to cater to the needs of user community.

The library installed the software *KOHA* in the year 2013 and then onwards all the circulation works are done through this software. In October 2015, ISI N-E Centre Library upgraded its KOHA version from 3.02 to 3.20.

Collection Development

ISI N-E Centre Library has an excellent collection of books, journals etc. In order to cater to the requirements of the user, the library has procured 82 new books in different fields during the 2017-18 session. Total number of books accessioned till date is 2758. The ISI N-E Centre Library also received 11 books from different sources as gift. All the purchased books are technically processed. The Library has 58 CDs of different reference books. The ISI N-E Centre Library has subscribed to 20 Indian and Foreign Journals and 5 Newspapers and 4 magazines during this period.

Membership

The main users of this Library are the students, faculty members, visiting scientists and staffs of the Institute. Total number of Library members in 2017-18 is 29. In addition, facilities were extended to around 50 users who participated in different workshops and seminars held in the institute.

Circulation Service: Around 600 books were circulated in this period.

Web Opac: Library members use this facility to browse and search the bibliographic database of the library and check the status of documents including their own transactions. The Library web page contains information about the Library, its collection, services, catalogue and list of Journals.

Current Awareness Service: Monthly book arrival list is regularly updated in the Library webpage.

Electronic Document Delivery Service: Under this service around 20 full-text articles and e-books in pdf format were downloaded and e-mailed to the students as per their requirement.

Research Activities

Web Based Service: Library has remote access to e-resources i.e., full-text and bibliographic databases from ISI Kolkata library website.

Prasanta Chandra Mahalanobis Memorial Museum and Archives

The Museum and Archives carried out regular up keeping programme for 921 exhibits through 101 panels and a collection of artifacts related to P. C. Mahalanobis displayed in the ground floor, Chatal and Professor's residence along with the pest control programme for the whole building of Amrapali. During this period 3130 sheets including books (17 nos.) and archival files (9 nos.) were treated. 568 files of untreated documents and 154 books has been listed.

Dspace software has been installed and 1167 items were uploaded on this software. Among the archival collections 62 Audio records are digitally converted. 1500 scanned documents are modified and 450 (approx.) slides were scanned.

Digitized cassettes and original cassettes has been accessioned. Museum artifacts and books of P.C.M's study room has been accessioned and this works is continuing. A list of all almirahs of Museum and Archives has been prepared. Documents of 33 (nos.) archival files are indexed for software and converted in Pdf files. (Continuing) One file related to PCM & Tagore and two files of B.N.Seal are recorded. Some photographs are scanned and referential work had been done for Publication work.

Besides general visitors, eminent persons and scientists and students from colleges, Universities were among the visitors of the museum (383 approx.). Scholars and researchers from different field consulted our archival collection for reference (20 nos.).

Center for Soft Computing Research: A National Facility, Kolkata

Moving Object Segmentation from Video Images

Dey, B. and Kundu, M.K.

Rough Sets in Video Tracking

Chakraborty, D. and Pal, S.K.

Moving Object Detection

Subudhi, B.N. and Ghosh, A.

Remote Sensing Image Analysis

Datta, A. and Ghosh, A.

Image Co-segmentation

Bandyopadhyay, S. and Ghosh, A.

Granular Computing

Ganivada, A., Ray, S.S. and Pal, S.K.

Network Mining

Kundu, S. and Pal, S.K.

Bio-informatics

micro RNA Analysis

Pal, J.K., Ray, S.S. and Pal, S.K.

Cognitive Vision

Ghosh, K. and Mukherjee, A.

Multisensory Information Processing in Psychophysics

Ghosh, K, and Chandran, Keerthi

Information Processing Mechanism in Plants

Ghosh, K, Roy, S and Bal, B

Climate informatics and climate change

Chatterjee, C., Datta, S. and Das, S.

Computer and Statistical Services Centre, Kolkata

The IT infrastructures of the Institute were updated and maintained by the CSSC. The outlying Centres (Delhi, Chennai, Tezpur and Bengaluru) and the Giridhi Unit of the Institute are connected with Site-to-Site VPN (Virtual Private Network). The IT infrastructures of the Institute including server's virtualization (cloud), software [VMware (esxi and VCenter), Matlab, Mathematica, ArcGis, R etc], Network (wired and wifi), Network and Internet security, IP Telephones, Video conferencing facility, e-library and internet facilities (NKN - 1 gbps) were managed by the CSSC and used by all the Centers of the Institute as a LAN. The meetings including Academic Council meetings among the Institute's Centers (Delhi, Bengaluru, Chennai and Tezpur) and Giridhi Unit through Video Conferencing facilities were managed by the CSSC. The cloud infrastructure with virtualization software, Cisco UCS servers (304 cores/608 threads) and the EMC 260 TB storage were managed by the CSSC, providing the computing facility to the users of the Institute. The classes (M.Tech. in Computer Science and PGDA of ISI Tezpur) through video conferencing facilities were organized by the CSSC throughout the year. The Server of the accounting package FACT installed in ISI Kolkata was accessed from all outlying Centers and Units through the Site-to-Site VPN connections for maintaining the central accounts system of the Institute. The LAN (wired) connections in each of the rooms of all the hostels excluding ISEC in the Kolkata campus are connected to the Computer Center (CSSC) with 10 Gbs backbone. The wifi facility covering the ISEC hostel was maintained by the Center. The CSSC arranged to provide Laptops and Desktops to the faculties, scientific staff and research scholars of the Institute. The CSSC also arranged to provide technical support to the Institute by Computer Trainees trained by the CSSC.

Members of CSSC took part in teaching different courses of the Institute and also supervised project work of non-ISI students studying MCA, B.Tech. etc.

3. PROJECTS

Internally Funded Projects

Ongoing Projects

Sl. no.	Name of the project	Principal Investigator(s)	Unit(s) involved
Theoretical Statistics and Mathematics Division			
1.	Ashok Maitra Memorial Lectures on Probability	A. Bandyopadhyay & K. Maulik	Stat-Math Unit, Delhi
Applied Statistics Division			
1.	Understanding the classification of various protein families and protein–protein interaction networks	P. Pal Choudhury	ASU, Kolkata
2.	Life and livelihood in areas affected by underground and open cast coal mining: A case study in Raniganj coalfields	D. Sengupta	ASU, Kolkata
Computer and Communication Sciences Division			
1.	The Cops and robber game on graphs	S. Das	ACMU
2.	Massive Data Algorithm - Phase II	S. C. Nandy	ACMU
3.	Algorithms for Design Automation in next Generation Technologies	S. Sur-Kolay	ACMU
4.	Efficient Vertical handover techniques in heterogeneous Wireless networks (VHO)	S. C. Ghosh	ACMU
5.	Algorithms and Bounds for Dominating Set, Geodetic Set, and Obstacle Number in Graphs	A. Bishnu	ACMU
6.	Geometric Optimization Problem	S. Roy	ACMU
7.	GP-GPU Computing for Large Scale Networks (GPLN)	N. Das	ACMU
8.	Holy Grail of Error-Resilient Bio-Assay on a Lab-on-a-chip (HERBAL)	B.B. Bhattacharya	ACMU
9.	A framework for Collaborative Application Execution for Mobile cloud Computing (MCC)	A. Banerjee	ACMU
10.	Multi-lingual Word Spotting	U. Pal	CVPRU
11.	Detection and Assessment of Image and Video Quality Degradation	S. Palit	CVPRU
12.	DEER: Document Engineering based Envisioning of Reading Behavior	U. Garain	CVPRU
13.	Information Retrieval from Microblogs	M. Mitra	CVPRU
14.	Study Towards an End-to-End Online Handwriting Recognition System	U. Bhattacharya	CVPRU
15.	Estimation of Ball Possession Statistics in Soccer Video	D.P. Mukherjee	ECSU
16.	Ensemble Memetic Algorithms for Multi-constrained Combinatorial in the Framework of the Travelling Thief Problem	S. Das	ECSU

17.	Transfer Learning: Neuro and Fuzzy Approaches	N.R. Pal	ECSU
18.	Event Recognition in the Video Captured in Uncontrolled Condition	P.P. Mohanta	ECSU
19.	Machine learning for cancer management using radio images and gene expressions	S. Mitra	MIU
20.	Modeling Host-Pathogen Interactions	R.K. De	MIU
21.	Computational Methods to Integrate Microarray Data and Protein-Protein Interaction Networks for Disease Gene Identification	P. Maji	MIU
22.	Developing Algorithms for miRNA Expression Analysis in Cancer	S.S. Ray	MIU
23.	Computational Methods for Studying HIV-1 Pathogenicity in Humans: Analysis over Multiple Infection Stages, Mechanisms and Biomolecular Networks	S. Bandyopadyay	MIU
24.	Analyzing the structure and dynamics of large scale real world complex networks	Late C.A. Murthy (to be supervised by D.P. Mandal)	MIU
25.	Development of GPGPU base parallel algorithms for land cover classification of remotely sensed big data	B. Uma Shankar	MIU
26.	Deep learning neural networks for pattern classification	S.K. Meher	SSIU
27.	Binary code for the brain	K. Majumdar	CSU
Physics and Earth Sciences Division			
1.	Oxygenation of the Proterozoic ocean	A. Banerjee	GSU
2.	Diversity, palaeobiogeography and palaeoecology of Miocene gastropods from India with special emphasis on Kutch, Gujarat	S.S. Das	GSU
3.	Archean greenstone belts in India – tectonics and sedimentation	D. Saha	GSU
4.	Gondwana vertebrates of peninsular India; a new perspective from field collection and morphometric data	D P. Sengupta	GSU
5.	Sedimentological and geochemical characteristics of the Late Triassic – Middle Jurassic formations in a Gondwana succession of Pranhita-Godavari Valley Basin – clues for changes in depositional environment and palaeoclimate	P. Ghosh	GSU
Biological Sciences Division			
1.	Invasive alien species – a friend or a foe?	A. Dewanji	AERU
2.	Surface Functionalized Porous Nanomaterial Loaded Micronutrient Fertilizers for Gangetic Alluvial Soils	A. Goswami	AERU

Projects

3.	Biochemical and physiological portrayal of Darjeeling tea cultivars towards the selection of superior clones against abiotic stress.	S. Das	AERU
4.	Exploring Potential of Sweet Sorghum (*Sorghum bicolor* L.) for Bio-Ethanol Production in West Bengal	S. Barik	AERU
5.	Fantastic yields in the system of rice intensification: fact or fallacy?	P. Banik	AERU
6.	Development of natural food preservatives from spices and herbs	R.R. Chattopadhyay	AERU
7.	Host-parasite interaction between the rice root knot nematode (*Meloidogyne graminicola*) and rice	A. Mukherjee	AERU
8.	Utilization of Brick factory coal ash and fly ash through application of vermitechnology	P. Bhattacharyya	AERU
9.	Candencing photosystem II with naturally occurring $CaMn_4O_5$ nano – cluster and nano particles of hematite ($\alpha - Fe_2O_3$)	A. Goswami	AERU
10.	*Sterculiafoetida,* L.– Eco-friendly, cost effective and rich sources of nutritious edible oil, animal food supplements as well as biofuel and its multimodal application to environmental perspectives	S. Mandal Biswas	AERU
11.	Management Practices for growth, yield and quality of maize (*Zea mays* L)	S. Adhikary	AERU
12.	Whole exome somatic mutation analysis in oral cancer and adjacent leukoplakia tissues: A study to understand progression of oral leukoplakia to cancer	B. Roy	HGU
13.	Genetic Mapping of rare variants, multivariate and longitudinal phenotypes	S. Ghosh	HGU
14.	On integrating several data sources in genetic association study	I. Mukhopadhyay	HGU
15.	Role of epigenetics in psoriasis: Identification of DNA methylation biomarker	R. Chatterjee	HGU
Social Sciences Division			
1.	Pilot Survey of the Informal/ Unorganised Sector: Application of an Easily Implementable Sampling Strategy	A. Majumder	ERU
2.	Safe School Survey	D.D. Roy	Psychology Research Unit
3.	Separation of information streams in face image processing	G. Chatterjee	Psychology Research Unit & CVPRU
4.	Algorithmic High-frequency Trading using Machine Learning Techniques	D. Mukherjee	SOSU

5.	Small-marginal landholders' farming and livelihood issues: A study in Jharkhand	H.C. Behera & I. Pal (CoPI) Asian Institute of Technology, Thailand	SRU, Giridih
6.	Female Employment: Soil Endowment and Agriculture Technology	F. Afridi & K. Mahajan (Ambedkar University Delhi)	EPU
7.	Conditional Aid as a Tools for Aid Selectivity	P. Roy Chowdhury, P. Bag (National University of Singapore) & K. Dam (CIDE, Mexico)	EPU
8.	Fairness is Flexible	P. Kothari, S. Banerjee (Queensland University of Technology and University of Melbourne) & P. Roy Chowdhury	EPU
9.	The Effect of Leaded Petrol on Crime Rates in India	E. Somanathan & A. Mukhopadhyay	EPU
10.	Public Goods Provision and Political Competition	F. Afridi, A. Dhillon (King's College, London), A. Roy Chaudhuri & E. Solan (School of Mathematical Sciences, Tel Aviv University	EPU
11.	An economic analysis of alternative treatment methods of ovarian cancer in India: An appraisal of economic burden, quality of life and mortality risk	P. Roy Chowdhury, A. Mukhopadhyay (Tata Medical Centre), Z. Husain (IIT Kgp), M. Datta (Presidency Univ.), I. Roy Chowdhury (JNU), J. Bhaumik (TMC)	EPU

Projects

		& Neeraj Bhatla (AIIMS)	
12.	Power Sharing Across Ethnic Groups In India	A. Roy Chaudhuri & S. Bhattacharjee (SNU)	EPU
Statistical Quality Control and Operations Research Division			
1.	Development of Cleanliness Index for Tamil Nadu	A. Biswas & A. Bandyopadhyay	SQC & OR Unit, Chennai & Kolkata
Library, Documentation and Information Sciences Division			
1.	Development of Digital libraries : Shewhart collections, Haldane collections, Dissertations, working papers and others	A.K. Pal	Library, Kolkata

Completed Projects

Sl. No.	Name of the project	Principal Investigator(s)	Unit(s) involved
Theoretical Statistics and Mathematics Division			
1.	ISI-Networks International Conference on Probability & its applications	K. Maulik	Stat-Math Unit, Kolkata
2.	Ashok Maitra Memorial Lectures on Probability	A. Bandyopadhyay & K. Maulik	Stat-Math Unit, Delhi & Kolkata
3.	Lectures on Probability & Stochastic Processes	A. Chakraborty & R.S. Hazra	Stat-Math Unit, Kolkata
Applied Statistics Division			
1.	Weight Selection in Multiple Hypothesis Testing	K. Das	ISRU
Computer and Communication Sciences Division			
1.	Unsupervised algorithms for deriving insights from text data and building intelligent query suggestion systems	D. Majumdar	CVPRU
2.	Development of Methodologies Towards Robust Reading of Old Degraded Bangla Printed Documents	S.K. Parui	CVPRU
3.	Tracking of Moving Objects from Video Scenes using Pattern Classifiers	A. Ghosh	MIU
4.	Indian Language Spoken Document Retrieval.	D.P. Mandal	MIU

5.	Computational Model of Brightness Perception in Images.	K. Ghosh	MIU
Physics and Earth Sciences Division			
1.	Sedimentology and stratigraphy of the Siwalik succession of eastern Himalaya and its bearing on the evolution of the Neogene foreland basin in the eastern Himalaya	T. Chakraborty	GSU
2.	A study of the Neogene and Quaternary successions of eastern Himalayan foreland basin	T. Chakraborty	GSU
3.	Evolution of dolomite formations in the Cuddapah basin: Numerical estimation constrained by field proxies	A. Banerjee	GSU
4.	Tectonostratigraphic evolution of the Sonakhan Greenstone Belt: A link between Archean greenstones and younger cratonic basins	S. Patranabis-Deb	GSU
5.	Implications of biotic events present within the Mesozoic non-marine vertebrates of the Gondwana basins of peninsular India	D.P. Sengupta & S. Bandyopadhyay	GSU
6.	Turbulence phenomena due to combined wave current flows over objects	S. Ghosh	PAMU
7.	Live-bed scour around Bridge abutment	S. Sarkar	PAMU
8.	Live-bed scour around Bridge pier	S. Sarkar	PAMU
9.	Conference on Frontiers of Statistical Physics	B. Basu & S.K. Maiti	PAMU
Biological Sciences Division			
1.	Phytonematode problems of rice in Jharkhand: density, diversity and pathogenesis	A. Mukherjee	AERU
2.	Biorational management of rice pests and diseases: evaluation of nanoparticle based and endophyte-mediated approaches	A. Mukherjee	AERU
3.	Study of soil carbon dynamics through integrated nutrient management in different agroecosystems of Assam	P. Bhattacharyya	AERU
4.	Parallel analysis of transport of contaminants in soil-plant systems in different soil types of eastern India: a sustainable approach	P. Bhattacharyya	AERU
5.	A Study on Sweet Sorghum (*Sorghum bicolor* L.) Crop using different fertility levels at different locations in West Bengal for maximization of crop production to obtain increased bio-fuel yield	S. Barik	AERU
6.	Determination of functional response under selective predation through experimentation and modeling	J. Chattopadhyay & S. Bhattacharya	AERU
7.	Health status and Survival Strategy of the tea garden labourers of locked tea gardens of Jalpaiguri district, West Bengal	S.K. Roy	BAU

Projects

8.	Living with Age: An Investigation on the Urban Poor Elderly Women	S. Mukhopadhyay	BAU
9.	Identification of epigenetic biomarkers in the cell free nucleic acids of the Oral Potentially Malignant Disorder (OPMD) and Oral Squamous Cell Carcinoma (OSCC) patients from eastern India	R. Chatterjee	HGU
Social Sciences Division			
1.	Bangla Pronunciation Dictionary	N.S. Dash	LRU
2.	Contract farming participation and emerging in agrarian relation: A case of potato growers in West Bengal	H. C. Behera	SRU, Giridih
3.	Backward linkages in the provision of education: Effect of tertiary education on schooling.	A. Mukhopadhyay, S. Bhattacharjee (SNU) & N. Chaddha (SNU)	EPU
4.	What drives career choice in urban India?	A. Mukhopadhyay, T. Jain (ISB) & N. Prakash (U. Conn)	EPU
5.	Linear correlation, basis risk and the design of index based crop insurance.	B. Ramaswami & D. Singh Negi	EPU
6.	Why is the aggregate demand side channel of monetary transmission weak in India?	C. Ghate, P. Basu (Durham), P. Gopalakrishnan (RBI), S. Banerjee (CSSSC) & S. Gupta	EPU
7.	Fiscal Policy, Public Debt, and Emerging Market Economy Business Cycles	C. Ghate, C. Dave (NYU-Abu Dhabi), P. Gopalakrishnan (RBI) & S. Tarafdar (SNU)	EPU
8.	Identity, Networks and Labor Productivity	F. Afridi, A. Dhillon (King's College) & S. Xin Li (University of Texas, Dallas)	EPU
9.	Simultaneous Borrowing and Saving in Microfinance	P. Roy Chowdhury & D. Dasgupta	EPU

10.	Persistence of Caste System in India: The Practice of Intra-Caste Marriage	T. Ray & A. Roy Chaudhuri	EPU
11.	Council Characteristics of Gram Panchayats and Local Public Good Provision	B. Ramaswami & S. Das (Yale University)	EPU
12.	Impact of Expanding Choices on Household Calorie Consumption in India	T. Ray and A. Das Gupta (ISI Delhi)	EPU
13.	Gender and Labour: A Study of Coffee Industry of Karnataka	M. Chattopadhyay	EAU
Statistical Quality Control and Operations Research Division			
1.	Problems and Prospects of Tea Industry in India	A.R. Mukhopadhyay	SQC & OR Unit, Kolkata
2.	Modelling multistage Process Monitoring and Fault Detection Strategies under Partial and Imprecise Information	P. Das	SQC & OR Unit, Kolkata
3.	Workshop on Statistical Techniques for Research Methodology	A. Sarkar	SQC & OR Unit, Mumbai & Chennai

Externally Funded Projects

Ongoing Projects

Sl. no.	Name of the project	Principal Investigator(s)	Unit(s) involved	Funded by
Theoretical Statistics and Mathematics Division				
1.	J.C. Bose Fellowship	D. Goswami	Stat-Math Unit, Kolkata	DST
2.	J.C. Bose Fellowship	A. Bose	Stat-Math Unit, Kolkata	DST
3.	Risk Analysis, Ruin and Extremes (RARE)	K. Maulik & P. Roy	Stat-Math Unit, Kolkata	Marie Curie Research Staff Exchange Fellowship from the 7th European Community Framework Programme
4.	Microsoft Research India: Unrestricted Research Grant	K. Maulik & A. Banerjee	Stat-Math Unit, Kolkata & ACMU	Microsoft Research India
5.	Workshop on Analytic Number Theory	S. Ganguly & R. Munshi	Stat-Math Unit, Kolkata	NCM

Projects

6.	Problems in Affine Algebraic Geometry	N. Gupta	Stat-Math Unit, Kolkata	DST
7.	Networks conference on Probability	K. Maulik	Stat-Math Unit, Kolkata	DAE
8.	Lectures in Probability and Stochastic Processes XII	A. Chakraborty & R.S. Hazra	Stat-Math Unit, Kolkata	DAE
9.	BOBASIO Region Airspace Safety Assessment Study	A. Bandyopadhyay & D. Sarkar	Stat-Math Unit, Delhi	Airport Authority of India
10.	J.C. Bose Fellowship	R.B. Bapat	Stat-Math Unit, Delhi	DST, Govt. of India.
11.	Sums of integers Fourier, combinatorics, computation	S. Laishram	Stat-Math Unit, Delhi	Ministry of Defence, Govt. of India
12.	Implementation of the Attacks on Elliptic Curve Discrete Log Problem	S. Laishram	Stat-Math Unit, Delhi	Ministry of Defence, Govt. of India
13.	E_0-semigroups: classification and invariants	B.V. Rajarama Bhat & D. Markiewicz	Stat-Math Unit, Bangalore	UGC
14.	Uniqueness for Stochastic Partial Differential Equations	S. Athreya & L. Mytnik	Stat-Math Unit, Bangalore	UGC
15.	Etale Fundamental groups	M. Kumar & L. Bary-Soroker	Stat-Math Unit, Bangalore	UGC
16.	Mathematical Examination of a Load Forecasting Model - Part II	M, Delampady, B.V. Rajarama Bhat, V.R. Padmawar & Soumen Dey	Stat-Math Unit, Bangalore	Hitachi India Limited, Bangalore
17.	J.C. Bose Fellowship project	B. V. Rajarama Bhat	Stat-Math Unit, Bangalore	Science and Engineering Research Board
18.	n-tuples of commuting Isometries	J. Sarkar	Stat-Math Unit, Bangalore	DST
Applied Statistics Division				
1.	International Passenger Survey	A. Sen Gupta	ASU, Kolkata	Ministry of Tourism, Govt. of India
2.	Methodological Study Towards Compilation and Forecasting of Services Trade Statistics	A. Sen Gupta	ASU, Kolkata	DGCI&S, Ministry of Commerce and Industry, Govt. of India
3.	Changes in pattern of irrigation, cultivation and livelihood of rural Bengal: The experienceof Jamalpur block of Bardhaman	D. Sengupta	ASU, Kolkata	DST, Govt. of West Bengal

4.	Indo-German DST Project	M. Nandi & S. Chatterjee	ASU, Kolkata	IISc, Bangalore
5.	Changes in pattern of irrigation, cultivation and livelihood of rural Bengal: The experience of Jamalpur block of Bardhaman	D. Sengupta	ASU, Kolkata	DST, Govt. of West Bengal
6.	Critical Appraisal and Methodological Recommendations on TV-Viewership Study(CAMROTS)	A. Sen Gupta	ASU, Kolkata	BAARC
7.	Survey for Studying the efficacy and impact of NATs	S. Purkayssstha	ASU, Kolkata	Board of Practical Training (ER). Under Ministry of HRD, Govt. of India
8.	Cryptography & Cryptanalysis	S. Maitra	ASU, Kolkata	Department of Atomic Energy (DAE), Board of Research in Nuclear Sciences, Govt. of India
Computer and Communication Sciences Division				
1.	Design for Manufacturability aware Global Routing	S. Sur-Kolay	ACMU	IBM, USA
2.	A Framework for Response Time Analysis for Embedded Programs on Modern Processors	A. Banerjee	ACMU	Advanced Systems Lab Hyderabad, DRDO, Govt. of India
3.	Binary Analysis for Software Security	A. Banerjee	ACMU	Scientific Analysis Group, DRDO, Govt. of India
4.	Approximate Computing Techniques for Robotics	A. Banerjee	ACMU	Tata Consultancy Services Innovation Labs
5.	Real-time end-to-end Text Detection and Recognition in the Wild	U. Pal	CVPRU	Ministry of Higher Education, Scientific Research of The Republic of Tunisia & DST, Govt. of India
6.	Planogram Image Matching	D.P. Mukherjee	ECSU	TCS
7.	National Post Doctoral Fellowship	J. Dasgupta	ECSU	SERB
8.	Information Access from Document Images of Indian Languages	B. Chanda	ECSU	MHRD

Projects

9.	Identification of Bainite and Martensite from Steel Micrographs – Phase II	P. Das & D.P. Mukherjee	SQC & OR Unit, Kolkata & ECSU	Tata Steel
10.	Systems and Methods for Object Recognition Based Estimation of Plannogram Compliance	D.P. Mukherjee	ECSU	TCS
11.	MOBILE+ project: a network project involving various Indian and European Institutes	A Ghosh	MIU	European Commission
12.	Recognition of Antinuclear Antibodies by Automated HEp-2 Cell IIF Image Analysis for Diagnosis of Connective Tissue Disease	P. Maji	MIU	DST, Govt of India
13.	A Big Data Perspective for Energy Management in Smart Grids and Dwellings	U. Maulik, (Jadavpur University) & S. Bandyopadhyay,	MIU	Indo-French Centre for the Promotion of Advanced Research (IFCPAR/CEFIPRA)
14.	Copula Functions in Analysis of Single Cell Gene Expression Data	S. Bandyopadhyay	MIU	DST (JC Bose Fellowship Project)
15.	Multi-dimensional Research to Enable Systems Medicine: Acceleration Using a Cluster Approach	S. Bandyopadhyay	MIU	Department of Biotechnology
16.	Analysis of Biological Network through discovery of Colored Motifs	S. Bandyopadhyay	MIU	Ministry of Electronics and Information Technology (Visveswaraya Scheme)
17.	Land Cover Classification of Remote Sensing Images Using Granular Computing Methodologies	Saroj K. Meher	SSIU	DST, Govt. of India
18.	Quantitative Characterization of Complex Topologically Prominent Components of Porous Media derived from Rocks of Petrologic Significance via Mathematical Morphology and Fractal Geometry	B.S. Daya Sagar	SSIU	DST-SERB, Govt. of India
19.	Quantitative Morphologic and Scaling Analyses of Lunar Digital Elevation Models (LDEM) Derived from TMC Data of Chandrayaan-1 Mission via Mathematical Morphology and Fractal Geometry	B.S. Daya Sagar	SSIU	ISRO-Chandrayaan, Govt. of India
20.	Quantification of neural information and subsequent coding scheme	K. Majumdar	SSIU	DBT

21.	Automatic detection of micro-seizures and a study on how they evolve into macro-seizures	K. Majumdar & F. Mormann (Department of Epileptology, University of Bonn, Germany)	SSIU	DBT & German Ministry of Education
22.	Cisco Grant	S. Ruj	CSRU	Cisco Systems Inc.
23.	NetApp Faculty Fellowship	S. Ruj	CSRU	NetApp Inc. USA
24.	Samsung GRO	S. Ruj	CSRU	Samsung Electronics, Kores
25.	Cryptanalysis of Symmetric Cipher Algorithms	G. Paul	CSRU	BARC, DAE, India
Physics and Earth Sciences Division				
1.	Sedimentary models of Precambrian Ergs in Brazil and India (Sept 2017 – August 2019)	G. Basilici & T. Chakraborty	University of Campinas & GSU	FAPESP, Brazil
2.	Systematics, Palaeobiogeography and change in diversity of Tertiary Gastropoda of Kutch, Gujarat	S.S. Das	GSU	SERB, DST, Govt. of India
3.	New Statistical Techniques to Identify Modified Gravity as the Source of Cosmic Acceleration	U. Alam	PAMU	DST
4.	Quest for Dark Matter and Inflation	A. Chatterjee	PAMU	DST
5.	Some Current Quantum Mechanical Problems in Linear and Nonlinear Quantum Systems	A. Sinha	PAMU	DST
6.	Macroscopic dynamics in ensembles of dynamical systems: some challenging issues	D. Ghosh	PAMU	DST
Biological Sciences Division				
1.	Surface functionalized solid and phytochemical loaded mesoporous nanomaterials for mosquito vector control	A. Goswami	AERU	DBT, Govt. of India
2.	Modulation and demodulation of photosynthesis using nanoparticles	A. Goswami	AERU	DST, Govt. of India
3.	Identification of Genetic and Epigenetic Associations Among Psoriasis patients in India	R. Chatterjee	HGU	SERB, DST, Govt. of India
4.	Identification of the contribution of Human Leukocyte Antigen (HLA) alleles and functional coding variants to the risk of psoriasis in patients from West Bengal	R. Chatterjee	HGU	DBT, Govt. of WB

Projects

5.	A Comprehensive Genomic and genetic characterization of Pancreatic Cancer patients in Indian Population	N. Sikdar (Ramalingaswamy Fellow)	HGU	DBT, Govt. of India
6.	Ramanujan Fellowship Grant	S. Datta (Ramanujan Fellow)	HGU	DST, Govt. of India
Social Sciences Division				
1.	Updatation of District Human Development Report, Hooghly	A. Majumder & C. Neogi	ERU	Office of the District Magistrate & the Collector, Hooghly, (Planning Section), Govt. of West Bengal
2.	Gender Violence in India: Its Roots, Nature and Extent	C. Sharma Biswas	ERU	ICSSR, Govt. of India
3.	Children's World: International Survey on Children's Well-being	S. Das	ERU	Jacobs Foundation
4.	Baseline survey project of Development of Horticulture in Paschimanchal districts	M. Pal	ERU & SRU	Director of Horticulture, Govt. of West Bengal
5.	The cognitive architecture of face-processing – understanding the separation of information streams	G. Chatterjee	PRU	DST, INSA
6.	Reviewing the existing system of compilation of trade indices	N. Chattopadhyay	SOSU	DGCI & S, Govt. of India
7.	IGP Project on evaluating the framework of various tests conducted	N. Chattopadhyay	SOSU	Tata Consultancy Services Limited (TCS ion)
8.	Design and Conc. Evaluation of Foreign Trade Policy	S. Mitra	SOSU	DGCI & S, Govt. of India
9.	Statistics and its applications for RBI Officers	N. Chattopadhyay	SOSU	Reserve Bank Of India
10.	Manchester University-ISI Project on Political Economy	N. Chattopadhyay	SOSU	ESRC Grant, Manchester University
11.	Socio-Economic Impact of National Highways	N. Chattopadhyay	SOSU	National Highways Authority of India
12.	Developing an Appropriate Structure Preserving Estimation (SPREE) Method for Estimating Domain-Level Aggregates from NSSO Household Surveys	D. Mukherjee	SOSU	M.O.S.& P.I., Govt. of India

13.	Developing an Appropriate Methodology for Estimating Proportion of Villages with Specific Infrastructural Facility	N. Chattopadhyay	SOSU	M.O.S.& P.I., Govt. of India
14.	UNDP consultancy assignment for development of Disaster Score Card for India: development of Disaster Risk Index for the districts/ States/UTs and Disaster Resilience Index	N. Chattopadhyay	SOSU	UNDP
15.	Centre for research on the Economics of Climate, Food, Energy and Environment (CECFEE)	E. Somanathan	EPU	Environment for Development (EfD) Initiative
16.	Strengthening livelihood opportunity for the forest dwellers in Jharkhand and Odisha	H.C. Behera	SRU Giridih	Ministry of Tribal Affairs, Govt. of India
Statistical Quality Control and Operations Research Division				
1.	Development of Quality System – Ordnance Factory, Ambajhari, Nagpur	R. Sett & A. Bandyopadhyay	SQC & OR Unit, Kolkata	Ordnance Factory
2.	Comprehensive Training Programme on Quality System Development at 5 OFs	A. Bandyopadhyay & R. Sett	SQC & OR Unit, Kolkata & Hyderabad	Ordnance Factory
3.	Normalization of Marks with Admission Committee for Professional courses	A.K. Chakraborty	SQC & OR Unit, Kolkata	Govt. of Gujarat
4.	Baseline Survey at LWSIT	R. Sett	SQC & OR Unit, Kolkata	LWSIT
5.	DFSS GB Pgms	K.K. Chowdhury	SQC & OR Unit, Bangalore	TVSM Hosur.
6.	Statistical Techniques for Quality Control	U.H. Acharya	SQC & OR Unit, Bangalore	FIAT Ltd. Pune.
7.	NVT Quality Certification	P.K. Perumallu	SQC & OR Unit, Bangalore	NVT QC
8.	Training & Consultancy in Design of Experiments	B. John K.K. Chowdhury	SQC & OR Unit, Bangalore	Toyota Industries Engine India Pvt Ltd
9.	Foundation Course on Business Analytics using R	B. John K.K. Chowdhury	SQC & OR Unit, Bangalore	Tesco
10.	Six Sigma Training & Implementation	S. Ray	SQC & OR Unit, Bangalore	Mother Dairy Fruits & Vegetables, Delhi

Projects

11.	Six Sigma Training & Implementation	S. Ray	SQC & OR Unit, Bangalore	Du, Dubai
12.	Program on Advanced Statistical Techniques	B. John K.K. Chowdhury	SQC & OR Unit, Bangalore	Altran Technologies
13.	Certification Program on Six Sigma Green Belt	B. John K.K. Chowdhury	SQC & OR Unit, Bangalore	UltraTech Cement Gulbarga
14.	Foundation Course on Business Analytics	B. John K.K. Chowdhury	SQC & OR Unit, Bangalore	Tata Steel, Jamshedpur
15.	Certification Program on Six Sigma Green Belt	B. John K.K. Chowdhury	SQC & OR Unit, Bangalore	Gujarat Cement Works, Amreli, Gujarat
16.	Foundation Course on Business Analytics	B. John K.K. Chowdhury	SQC & OR Unit, Bangalore	Ernst & Young
17.	Certification Program on Six Sigma Green Belt	B. John K.K. Chowdhury	SQC & OR Unit, Bangalore	Rajshree Cement Works, Gulbarga
18.	Quality System Development of Ordnance Factories at OFMK, Medak	A. Bandhyopadhyay & G Murali Rao, A.L.N. Murthy	SQC & OR Unit, Kolkata & Hyderabad	Ordnance Factory, Ministry of Defence, Govt. of India
19.	Certification program on Business Analytics and Data Mining	A. Sarkar	SQC & OR Unit, Mumbai, Kolkata & Bangalore	Participants
20.	Six Sigma Green Belt Program	S. Sikder	SQC & OR Unit, Mumbai	Controllerate of Naval Arm Inspection (W)
21.	DFSS Deployment	S. Rath	SQC & OR Unit, Pune	Asian Paints Ltd.
22.	Six Sigma Black-Belt	S. Rath	SQC & OR Unit, Pune	Participants
23.	Six Sigma Master Black-Belt	S. Rath	SQC & OR Unit, Pune	Participants
24.	Data Analytic Program	S. Rath	SQC & OR Unit, Pune	Participants
25.	Six Black-Belt Program	S. Rath	SQC & OR Unit, Pune	Vodafone, Pune
26.	Six Sigma Deployment Program	S. Rath	SQC & OR Unit, Pune	TACO Group

27.	Six Sigma Black-Belt Program	S. Rath	SQC & OR Unit, Pune	Balasore Alloys Ltd., Orissa
28.	DoE Program	S. Rath	SQC & OR Unit, Pune	Tata Chemicals Ltd.
29.	Six Sigma Black-Belt Program	S. Rath	SQC & OR Unit, Pune	Participants
30.	Six Sigma Master Black-Belt Program	S. Rath	SQC & OR Unit, Pune	Participants
31.	Data Analytic Public Program	S. Rath	SQC & OR Unit, Pune	Participants
Centre for Soft Computing Research: A National Facility				
1.	DAE Raja Ramanna Fellowship	S.K. Pal	CSCR	Department of Atomic Energy, Govt. of India
2.	DST INSPIRE Faculty Award	S. Das	CSCR	DST, Govt. of India
3.	Retrieval of Atmospheric water vapour from NAVIC/GAGAN data & prediction of extreme weather events based on machine learning techniques	S. Das	CSCR	ISRO
4.	Understanding vision from filling in and visual illusion perspectives with the help of computational modeling	K. Ghosh	CSCR	Cognitive Science Research Initiative, DST, Govt. of India
5.	Development of computer vision based 3D Indian sign languages recognition to assist differently abled	S. Roy	CSCR	Women Scientist Scheme-B, DST, Govt. of India

Completed Projects

Sl. no.	Name of the project	Principal Investigator(s)	Unit(s) involved	Funded by
Theoretical Statistics and Mathematics Division				
1.	Exponential Diophantine Equations: Resolution of some well known Diophantine equations	S. Laishram	Stat-Math Unit, Delhi	Ministry of Defence, Govt. of India
Applied Statistics Division				
1.	Design and Development of Database and Analytical Tools for Microarray Data on Leishmani Donovani Parasite	A. Sen Gupta	ASU, Kolkata	DBT, Ministry of Science and Technology, Govt. of India.

Projects

Computer and Communication Sciences Division				
1.	Lithography Aware Physical Design for Below 20 nm Process Technology	S. Sur-Kolay	ACMU	Indo-Taiwan Joint Research Programme in Science & Technology
2.	An Equivalence Checking Framework for Vulnerability Assessment for FPGA-based design flows	A. Banerjee	ACMU	Centre for Artificial Intelligence and Robotics, DRDO, Govt. of India
3.	Delay Fault Modeling and Test Generation for Power Supply Noise	S. Sur-Kolay & B.B. Bhattacharya	ACMU	Intel Corporation, USA
Social Sciences Division				
1.	Traffic Survey on Fare Structure	D. Mukherjee	SOSU	Metro Railway, Kolkata
2.	Poverty and Aspiration	S. Mitra	SOSU	ESRC grant through CAGE, Warwick University, UK
3.	Manchester University-ISI Project on Political Economy	S. Mitra	SOSU	ESRC Grant, Manchester
4.	Climate Change and Agricultural Yield in Karnataka	M. Swaminathan	EAU	Karnataka Govt.
Statistical Quality Control and Operations Research Division				
1.	Six Sigma training and Implementation	A.K. Chakraborty	SQC & OR Unit, Kolkata, Bangalore, Hyderabad & Mumbai	ITC, PSPD
2.	Development of Sampling Scheme	R. Sett	SQC & OR Unit, Kolkata	ITC Ltd.
3.	QMS Implementation at ISC, ITC	R. Sett	SQC & OR Unit, Kolkata	ITC Ltd.
4.	Certificate Program on Business Analytics	A. Gupta	SQC & OR Unit, Kolkata	Participants
5.	Six Sigma Training & Implementation	S. Ray, A. Roy Chowdhury & E.V. Gijo	SQC & OR Unit, Bangalore	HAL Management Academy, Bangalore

6.	Module-wise Training on Statistical Techniques	E.V. Gijo A. Roy Chowdhury & S. Ray	SQC & OR Unit, Bangalore	Biocon Ltd., Bangalore
7.	Six Sigma Training & Implementation	A.K. Chakraborty & A. Roy Chowdhury	SQC & OR Unit, Bangalore & Kolkata	ITC, Bollaram; ITC Triveni & ITC, Kovai
8.	Program on Design of Experiments	B. John	SQC & OR Unit, Bangalore	TITAN Company Limited (Jewellery Division)
9.	Facilitation and guidance for statistical modelling	B. John	SQC & OR Unit, Bangalore	Hewlett Packard
10.	Program on Business Analytics	B. John & K.K. Chowdhury,	SQC & OR Unit, Bangalore	Airbus India
11.	Program on Business Analytics	A. Banerjee, B. John & A. Sarkar	SQC & OR Unit, Kolkata, Bangalore & Mumbai	L&T Infotech
12.	Program on Business Analytics	A. Sarkar & B. John	SQC & OR Unit, Mumbai & Bangalore	Adani Power
13.	Training program on Statistical Techniques	E.V. Gijo	SQC & OR Unit, Bangalore	Environmental Management & Policy Research Institute (EMPRI)
14.	Six Sigma Green Belt Certification Program	U.H. Acharya & E.V. Gijo	SQC & OR Unit, Bangalore	TESCO
15.	Six Sigma Training & Implementation	U.H. Acharya	SQC & OR Unit, Bangalore	Sundaram Clayton, Hosur
16.	Statistical Techniques for Quality Control	U.H. Acharya	SQC & OR Unit, Bangalore	FIAT Ltd. Pune
17.	General Training program on Six Sigma Green Black Belt including project guidance	A. Rajagopal	SQC & OR Unit, Coimbatore	Participants
18.	Quality System Implementation	A. Rajagopal	SQC & OR Unit, Coimbatore	SRC, Salem

Projects

19.	Metric for day to day management information system	A. Rajagopal	SQC & OR Unit, Coimbatore	SRC, Salem
20.	New product Development and flow of orders from Kerala for school uniforms processing	A. Rajagopal	SQC & OR Unit, Coimbatore	TCTP, Erode
21.	Quality System Implementation	A. Rajagopal	SQC & OR Unit, Coimbatore	MYK, Hyderabad
22.	Implementation of increasing turnover	A. Rajagopal	SQC & OR Unit, Coimbatore	MYK, Hyderabad
23.	Quality System Implementation	A. Rajagopal	SQC & OR Unit, Coimbatore	Shiva Texyarn Ltd.
24.	Measurable objective performance Evaluation	A. Rajagopal	SQC & OR Unit, Coimbatore	Shiva Texyarn Ltd.
25.	DFSS for Engineering R&D	A. Rajagopal	SQC & OR Unit, Coimbatore	Brakes India
26.	Project Management of External Assignments for Customers satisfaction	A. Rajagopal	SQC & OR Unit, Coimbatore	FCRI
27.	Six Sigma Training and Guidance towards Business Excellence	A.L.N. Murthy & G. Murali Rao	SQC & OR Unit, Hyderabad	ITC Limite – PSPD, Bhadrachalam
28.	Statistical Methods for Data Analytics	G. Murali Rao & A.L.N. Murthy	SQC & OR Unit, Hyderabad	Meritus Intelytics Pvt. Ltd. (Merilytics) Hyderabad
29.	Quality & Reliability Engineering	G. Murali Rao	SQC & OR Unit, Hyderabad	DIAT, Pune
30.	Green Belt Training	A. Sarkar	SQC & OR Unit, Mumbai	XIMB, Bhubaneswar
31.	Workshop on Business Analytics and Data Mining	A. Sarkar	SQC & OR Unit, Mumbai & Bangalore	Adani Power
32.	Training on SPC	S. Sikder	SQC & OR Unit, Mumbai	Global Nonoven, Igatpuri, Maharashtra
33.	Green Belt Training	A. Sarkar	SQC & OR Unit, Mumbai	Grasim Industries, Bharuch
34.	Workshop on Business Analytics and Data Mining	A. Sarkar	SQC & OR Unit, Mumbai	Tanfeeth, Dubai
35.	Green Belt Training	A. Sarkar	SQC & OR Unit, Mumbai	BNP Paribas, Mumbai

36.	Green Belt Training	A. Sarkar	SQC & OR Unit, Mumbai	Hindalco Industries, Singrauli, Madhya Pradesh
37.	Statistical Techniques for Business Forecast	A. Sarkar	SQC & OR Unit, Mumbai	Participants
38.	Statistical Techniques for Business Forecast	A. Sarkar	SQC & OR Unit, Mumbai	Participants
39.	Workshop on Business Analytics and Data Mining	A. Sarkar	SQC & OR Unit, Mumbai & Bangalore	Participants
40.	Green Belt Training	A. Sarkar	SQC & OR Unit, Mumbai	Participants
41.	FMEA Training	A. Sarkar	SQC & OR Unit, Mumbai	Biological E Limited, Hyderabad
42.	Weekend Six Sigma Green Belt Training	S. Sikder	SQC & OR Unit, Mumbai	Participants
43.	Six Sigma Black Belt Training	A. Sarkar	SQC & OR Unit, Mumbai	Participants
44.	Weekend Six Sigma Green Belt Training	S. Sikder	SQC & OR Unit, Mumbai	Participants
45.	Weekend Six Sigma Green Belt Training	S. Sikder	SQC & OR Unit, Mumbai	Participants
46.	Statistical Techniques for Research Methodology	A. Sarkar	SQC & OR Unit, Mumbai	Participants
47.	Statistical Techniques for Business Forecasting	A. Sarkar	SQC & OR Unit, Mumbai	Participants
48.	Six Sigma Black Belt Training	A. Sarkar	SQC & OR Unit, Mumbai	Participants

North East Projects

Ongoing Projects

Sl. no.	Name of the project	Principal Investigator(s)	Unit(s) involved
Physics and Earth Sciences Division			
1.	Paleogeography of the Neogene foreland basin of Eastern Himalaya and its relationship with contemporaneous sediments of Mizoram	T. Chakraborty	GSU

Projects

Completed Projects

Sl. no.	Name of the project	Principal Investigator(s)	Unit(s) involved
Biological Sciences Division			
1.	North East Training Program	S. Ghosh	HGU
Statistical Quality Control and Operations Research Division			
1.	Data Analytics for Medical and Healthcare Professionals	G. Murali Rao & A.L.N. Murthy	SQC & OR Unit, Hyderabad

4. SYMPOSIA, CONFERENCES, WORKSHOPS, LECTURES AND SEMINARS ORGANISED

Symposia and Conferences

1. Conference on "*Probability Meeting*": Stat-Math Unit, Bangalore, May 12–14, 2017.

2. Nurture Camp on "*Madhava Competition*": Stat-Math Unit, Bangalore, June 05-09, 2017.

3. Conference on "*Quantum Probability: Past, Present and Future* (On the occasion of 70th birthday of Professor Luigi Accardi)": Stat-Math Unit, Bangalore August 10-12, 2017.

4. Symposium on "*Stat-Math*": Stat-Math Unit, Bangalore, September 18-19, 2017.

5. Conference on "*9th Meeting of the Forum for Information Retrieval Evaluation (FIRE 2017)*": CVPR, Kolkata, in collaboration with DA-IICT, Gandhinagar; Indian Institute of Science, Bangalore and Information Retrieval Society of India, December 08-10, 2017.

6. 9th International Conference on "*Advances in Pattern Recognition, 2017 (ICAPR-2017)*": ECSU, Kolkata; SSIU, Bangalore and R.C. Bose Centre for Cryptology and Security, Kolkata, December 27-30, 2017.

7. 7th International Conference on "*Pattern Recognition and Machine Intelligence (PReMI'17)*": MIU, Kolkata, December, 05-08, 2017.

8. International Conference on "*Condensed Matter Physics*": PAMU, Kolkata, November 14–16, 2017.

9. National Conference on "*Frontiers of Statistical Physics*" PAMU, Kolkata, in collaboration with Presidency University, Kolkata, February 26–28, 2018.

10. National Symposium on "*Applications of Mathematics and Statistics on Biological and Physical Systems*": AERU Kolkata, December 12, 2017.

11. 5th International Conference on "*India Biodiversity Meet-2018*": AERU, Kolkata, March15-17, 2018.

12. National Symposium on "*Agricultural research under a changing climate in Eastern India*": AERU, Giridih, January 17-18, 2018.

13. Symposia on "*Planning, Inequality and the Political Economy of Development in India*": ERU, Kolkata, February 09, 2018.

14. National Conference on "*Population and Development in Eastern and North-Eastern Regions of India*", PSU, Kolkata in collaboration with Indian Association for Study of Population (IASP), September 14-15, 2017.

15. Mini-Conference on "*Networks and Games*": SOSU, Kolkata, July 03-04, 2017.

16. 7th Conference on "*West Bengal Growth*", SOSU, Kolkata, December 26-27, 2017.

17. 13th Annual Conference on "*Economic Growth and Development*": EPU, Delhi, December 18-20, 2017.

Conferences and Seminars

18. Symposium on "*Recent Trends in Operations Research and Data Science*" (Celebration of 125th Birth Anniversary of Prof. Prasanta Chandra Mahalanobis): SQC & OR, Kolkata, December 19, 2017.

19. Mini Symposium on "*Big Data and Large Scale Computing*": SQC & OR, New Delhi, December 27, 2017.

20. International Symposium on "*Operations Research and Game Theory: Modeling and Computation*": SQC & OR, New Delhi, January 09-11, 2018.

21. Symposium on "*Six Sigma Case Study Presentation Contest*": SQC & OR, Bangalore, February 27-28, 2018.

22. Symposium on "*Artificial Intelligence for Business Intelligence Achieving Continuous Improvement (Six Sigma case studies)*" (Celebration of 125th Birth Anniversary of Prof. Prasanta Chandra Mahalanobis): SQC & OR, Coimbatore, in collaboration with INTEL Nervana AI Academy, October 28-29, 2017.

North-East Symposia and Conferences

1. 5th Workshop on "*Pattern Analysis and Applications*": CVPR, Kolkata, held at Central Institute of Technology, Kokrajhar, Assam, February 05-08, 2018.

Workshops and Training Programmes

1. Workshop on "*h-principle"*: Stat-Math Unit, Kolkata, in collaboration with NCM and NBHM, Department of Atomic Energy, May 22-June 10, 2017.

2. Training Programme on "*Mathematical & Computational aspects of Integer Factorization*": Stat-Math Unit, New Delhi, in collaboration with DRDO, November 28 - December 07, 2017.

3. Workshop on "*Modern aspects of Function Theory, Operator Theory and Operator Algebras (2018)*": Stat-Math Unit, Bangalore, March 05-10, 2018.

4. Training Programme on "*Statistical Data Analytics*": ASU, Kolkata, in collaboration with GE India Technology Centre Private limited, April 22-23, 2017.

5. Workshop on "*Winter School on Data Analytics*": ASU, Kolkata, March 26-29, 2018.

6. Workshop on "*Computational Statistics*": ISRU, Kolkata, March 19-23, 2018.

7. Training Prgramme on (Global Initiative For Academic Networks) "*Decentralized Computations* (From Nets to Swarms)": ACMU, Kolkata, December 04-08, 2017.

8. Workshop on "*Parallel Processing for Large networks*": ACMU, Kolkata, December 27-29, 2017.

9. Workshop on "*Introduction to Algorithms and Optimization*": ACMU, Kolkata, in collaboration with IEEE CEDA All India Chapter, July 04–12, 2017.

10. 2nd International Workshop on "*Pattern Analysis and Applications*": CVPR, Kolkata, January 29-31, 2018.

11. Training Progamme on "*Image captioning with deep learning*": ECSU, Kolkata, June 05, 2017.

12. 4th Summer School on "*Computer Vision, Graphics and Image Processing*": ECSU, Kolkata, May 31–July 14, 2017.

13. Workshop on "*Healthcare: Statistical and Computational Aspects*": ECSU, Kolkata, March 23, 2018.

14. Summer School on "*Recent Advances in Computational Intelligence*": MIU, Kolkata, in collaboration with IEEE Computational Intelligence Society and IEEE Kolkata Chapter, September 18-22, 2017.

15. Training Programme on "*Interactive and Visual Approaches to Data Mining (GIAN-IVADM)*": MIU, Kolkata, October 30 – November 03, 2017.

16. Silver Jubilee Workshop on "*Machine Intelligence and Applications*": MIU, Kolkata, March 23, 2018.

17. Workshop on "*Satellite Remote Sensing and Image Analysis Activities*": SSIU, Bangalore, in collaboration with the Bangalore Section IEEE GRSS Chapter, June 12, 2017.

18. Summer Internship on "*Cryptology*": CSRU, Kolkata, May 01-July 31, 2017.

19. Workshop on "*Advances in Authenticated Encryption*": CSRU, Kolkata, in collaboration with National Mathematics Initiative, India September 19-22, 2017.

20. Workshop on "*Blockchain Technologies*": CSRU, ISI Kolkata, November 29 -December 01, 2017.

21. Workshop on "*Application of Probability and Statistics in Cryptology* (on the occasion of the 125th Birth Anniversary of Prof. Prasanta Chandra Mahalanobis)": CSRU, Kolkata, February 14-15, 2018.

22. Course on "*Morphometrics and its Applications in Palaeontology*": GSU, Kolkata in collaboration with University of California (Riverside), Kolkata, March 28–29, 2018.

23. Workshop on "*Statistical Methods and R Programmeming for Biologists*": AERU Kolkata, March7-13, 2018.

24. Training Programme on "*Summer School on SPSS*": BAU, Kolkata, August 22-25, 2017.

25. Training Programme on "*Winter School on Research Methods in Biology and Application of Statistics*": BAU, Kolkata, February 05–10, 2018.

26. Workshop on ''*Spatial Analysis (Statistics and Econometrics)*": ERU, Kolkata, January 08–10 and 15–16, 2018.

27. Training on "*Career Interest Profile Similarity*": PRU, Kolkata, August 08, 2017.

28. Orientation workshop on "*Non-social Cognition and Intelligence using WAIS-IV*": PRU, Kolkata, December 04-08, 2017.

29. Training on "*R-Programmeming for Behavioural Data Examination for Post-Graduate & Researchers*": PRU, Kolkata, March 14-15, 2018.

Conferences and Seminars

30. Training Programme on "*Interaction* (for District Statistical Officers of National Statistics Bureau, Royal Government of Bhutan)": SOSU, Kolkata, June 23, 2017.

31. Training Programme on "*Statistical Theory and Applications - I*" (for Officers of RBI): SOSU, Kolkata, May 29- June 30, 2017.

32. Training Programme on "*Statistical Theory and Applications - II*" (for Officers of RBI): SOSU, Kolkata, August 08-September 08, 2017.

33. Workshop on "*Training of Research Personnel of Doordarshan*": SOSU, Kolkata, September 06-08, 2017.

34. Training Programme on "*Economic Statistics, Sampling, and Inequality and Poverty Measures for Government Officials of N-E States*": SOSU, Kolkata, October 09-13, 2017.

35. Workshop on "*Network and Graphical Statistics*": SOSU, Kolkata, January 05, 2018.

36. Training Programme module on "*Sample Survey Methodology and Practical Aspects of Conducting Surveys*" (for ISS Probationers 39th Batch): SOSU, Kolkata, January 23-February 16, 2018.

37. Training Programme on "*Data Analytics including Data Dissemination*" (for ISS Probationers 39th Batch): SOSU, Kolkata, February 19–March 23, 2018.

38. Training Programme on "*Recent Developments in Survey Methodology*" (for ISS Officers): SOSU, Kolkata, March 12-16, 2018.

39. Training Programme on "*Recent Developments in International Statistical Systems*" (for ISS Officers): SOSU, Kolkata in collaboration with Overseas Learning Component at Statistics, Netherlands, March 19-23, 2018.

40. National Conference on "*Land, Labour and Livelihood: Focus on Development of Marginalized Communities and Social Groups*": SRU, Giridih, January 30-31, 2018.

41. Training Programme on "*Research Design/Planning for Collection and Analysis of Data for Researchers in Social Sciences and Allied Areas*" (on the occasion of 125th Birth Anniversary of Prof. Prasanta Chandra Mahalanobis): SRU, Kolkata, March 06-07, 2018.

42. Training Programme on "*Microeconomics*" (for ISS Probationers): EPU, Delhi, May 22-June 02, 2017.

43. 6th Workshop on "*Macroeconomics*": EPU, Delhi, October 26, 2017.

44. Workshop on "*Professional Development*": EPU, Delhi, October 30–November 02, 2017.

45. 3rd Annual Workshop on "*CECFEE*": EPU, Delhi, held at Udaipur, November 17-18, 2017.

46. Workshop on "*Jobless Growth*": EPU, Delhi, in collaboration with World Bank, March 08, 2018.

47. Workshop on "*Public Economic*": EPU, Delhi, in collaboration with Delhi School of Economics, March 20-21, 2018

48. Training Programme on "*Use of Indian Database*": EAU, Bangalore, May 29 –June 02, 2017.

49. Workshop on "*Contemporary Rural Issues in India*": EAU, Bangalore, March 27, 2018.

50. Training Programme on "*Six Sigma Green Belt*": SQC & OR, Kolkata, 10–14 July 2017.

51. Training Programme on "*Business Analytics*": SQC & OR, Kolkata, July 29-September 17 2017.

52. Training Programme on "*Six Sigma Green Belt*": SQC & OR, Kolkata, held at ISI, Giridih, October 30–November 03, 2017.

53. Workshop on "*Design and Analysis of Experiments*": SQC & OR, Kolkata, November 06-11, 2017.

54. Workshop on "*Six Sigma Green Belt*": SQC & OR, Kolkata, November 20–24, 2017.

55. Workshop on "*Scientific Framework for National Transformation*": SQC & OR, Kolkata, January 16–18, 2018.

56. Workshop on "*Six Sigma Green Belt*" SQC & OR, Kolkata, March 19-23, 2018.

57. Training Programme on "*Six Sigma Green Belt"*: SQC & OR, New Delhi, April 26 - 28, 2017.

58. Training Programme on "*Six Sigma Green Belt"*: SQC & OR, New Delhi, May 24 - 26, 2017.

59. Training Programme on "*Six Sigma Green Belt*": SQC & OR, New Delhi, August 02-04, 2017.

60. Training Programme on "*Six Sigma Black Belt 1st Module*": SQC & OR, New Delhi, August 22- 24, 2017.

61. Training Programme on "*Six Sigma Green Belt*": SQC & OR, New Delhi, September 13-15, 2017.

62. Training Programme on "*Six Sigma Black Belt 2nd Module*": SQC & OR, New Delhi, September 19 - 22, 2017.

63. Training Programme on "*Six Sigma Black Belt 3rd Module*": SQC & OR, New Delhi, October 10-13, 2017.

64. Training Programme on "*Six Sigma Black Belt 4th Module*": SQC & OR, New Delhi, November 15-17, 2017.

65. Workshop on "*Programme on Environmental Data Interpretation, Compilation and Reporting*": SQC & OR, New Delhi, in collaboration with Central Pollution Control Board, Ministry of Environment, Forest and Climate Change, Govt. of India, February 05-09, 2018.

66. Training Programme on "*Six Sigma Green Belt*": SQC & OR, New Delhi, held at Grasim Industries-Indian Rayon, Veraval, Gujrat, March 26-28, 2018.

67. Training Programme on "*Reliability Engineering & Life Testing (RE-01)*": SQC & OR, Bangalore, April 25–28, 2017.

68. Training Programme on "*Six Sigma Green Belt (GB-41)*": SQC & OR, Bangalore, May 15-20, 2017.

69. Training Programme on "*Statistical Techniques for Business Analytics (BA-04)*": SQC & OR, Bangalore, May 25–27 and June 1–3, 2017.

70. Training Programme on "*Six Sigma Master Black Belt (MBB-27)*": SQC & OR, Bangalore, June 05–17, 2017.

Conferences and Seminars

71. Training Programme on "*Six Sigma Black Belt (BB-25)*": SQC & OR, Bangalore, July 10–15 (Phase-1) and August 28– September 02, 2017 (Phase-2).

72. Training Programme on "*Problem Solving using Design of Experiments (DoE-04)*": SQC & OR, Bangalore, July 20–22, 2017.

73. Training Programme on "*Six Sigma Green Belt (GB-42)*": SQC & OR, Bangalore, July 24-29, 2017.

74. Training Course on "*Predictive Modeling using Python (PM-01)*": SQC & OR, Bangalore, August 17–19, 2017.

75. Training Programme on "*Six Sigma Green Belt (GB-43)*": SQC & OR, Bangalore, September 12-17, 2017.

76. Training Course on "*Business Forecasting using R (BF-03)*": SQC & OR, Bangalore, October 26–28, 2017.

77. Training Programme on "*Six Sigma Green Belt (GB-44)*": SQC & OR, Bangalore, November 06-11, 2017.

78. Training Programme on "*Business Analytics using R (BA-05)*": SQC & OR, Bangalore, November 20-25, 2017.

79. Training Programme on "*Six Sigma Black Belt (BB-26)*": SQC & OR, Bangalore, October 09- 15 (Phase-1) and November 27– December 02, 2017 (Phase-2).

80. Training Programme on "*Six Sigma Master Black Belt (MBB-28*)": SQC & OR, Bangalore, January 08–21, 2018.

81. Training Programme on "*Six Sigma Green Belt (GB-45)*": SQC & OR, Bangalore, January 22- 27, 2018.

82. Training Programme on "*Multivariate Data Analysis*": SQC & OR, Bangalore, February 08-10, 2018.

83. Training Programme on "*Six Sigma Black Belt (BB-27)*": SQC & OR, Bangalore, February 12– 17 2018 (Phase-1) and March 12–17, 2018 (Phase-2).

84. Training Programme on "*Predictive Modeling using Python (PM-02)*": SQC & OR, Bangalore, February 22–24, 2018.

85. Training Programme on "*Six Sigma Green Belt (GB-46)*": SQC & OR, Bangalore, March 19–24, 2018.

86. Training Programme on "*Six Sigma Black Belt Programme*": SQC & OR, Coimbatore, January-October 2017.

87. Training Programme on "*New Product Development*": SQC & OR, Coimbatore, April 05, 2017.

88. Training Programme on "*Performance metric analysis*": SQC & OR, Coimbatore, April 24-27, 2017.

89. Training Programme on "*Students from local engineering colleges*": SQC & OR, Coimbatore, May 2017 - June 2017.

90. Training Programme on "*Product and Process Improvement – Engineers*": SQC & OR, Coimbatore, May 31 and August 07, 2017.

91. Training Programme on "*Design for Six Sigma*": SQC & OR, Coimbatore, June 10-15 and August 29-31, 2017.

92. Training Programme on "*Navigating the company from the corporate office*": SQC & OR, Coimbatore, June 19-20 and 23-24, 2017.

93. Training Programme on "*Cluster Analysis of Product Mix*": SQC & OR, Coimbatore, July 07-08, 2017.

94. Training Programme on "*Metric for Day to day management information system*": SQC & OR, Coimbatore, August 18, 2017.

95. Training Programme on "*Prediction Analysis*": SQC & OR, Coimbatore, September 14, 2017.

96. Training Programme on "*Decision making Management*": SQC & OR, Coimbatore, September 25, 2017.

97. Training Programme on "*Health Analytics*": SQC & OR, Coimbatore, September 26, 2017.

98. Workshop on "*AI for BI achieving CI*": SQC & OR, Coimbatore, October 28-29, 2017.

99. Training Programme on "*Six Sigma Green Belt*": SQC & OR, Hyderabad, September 11-15 2017.

100. Training Programme on "*Business Analytics with Six Sigma Master Black Belt*": SQC & OR, Hyderabad, September 18-23, 2017 (Phase-I) and October 23-28, 2017(Phase-II).

101. Training Programme on "*Six Sigma Black Belt*": SQC & OR, Hyderabad, December 11–16, 2017(Phase-I) and January 16 – 20, 2018(Phase-II).

102. Training Programme on *"Six Sigma Green Belt"*: SQC & OR, Mumbai, held at YWCA conference hall, Mumbai, April 07-09 and 15-16, 2017.

103. Training Programme on "*Statistical Techniques for Data Mining and Business Analytics*": SQC & OR, Mumbai, held at M/s. Adani Power, April 17-19, 2017.

104. Training Programme on *"Six Sigma Black Belt"*: SQC & OR, Mumbai, May-July, 2017.

105. Training Programme on *"Six Sigma Green Belt"*: SQC & OR, Mumbai, held at YWCA conference hall, Mumbai, June 09-11 and 17-18, 2017.

106. Training Programme on *"Six Sigma Green Belt"*: SQC & OR, Mumbai, held at Grasim Industries, Vilyat, June 12-14, 2017.

107. Training Programme on *"Six Sigma Green Belt"*: SQC & OR, Mumbai, held at BNP Paribas, Mumbai, June 27-28, July 27-28 and August 21-22, 2017.

108. Training Programme on *"Statistical Techniques for Business Forecasting"*: SQC & OR, Mumbai, July 13-15, 2017.

Conferences and Seminars

109. Training Programme on *"Six Sigma Green Belt"*: SQC & OR, Mumbai, held at Hindalco Industries, Singrauli, Madhya Pradesh, July 19-21, 2017.

110. Training Programme on "*Statistical Techniques for Data Mining and Business Analytics*": SQC & OR, Mumbai, held at Tanfeeth Dubai, July 30 – August 03, 2017.

111. Training Programme on "*Statistical Techniques for Six Sigma GB*": SQC & OR, Mumbai, held at Birla Sunlife, August 18, 2017.

112. Training Programme on "*Statistical Techniques for Data Mining and Business Analytics*": SQC & OR, Mumbai, held at Hotel Athithi, Mumbai, September 08-10 and 22-24, 2017.

113. Training Programme on *"Six Sigma Green Belt"*: SQC & OR, Mumbai, held at YWCA conference hall, Mumbai, October 06-08 and 14-15, 2017.

114. Training Programme on *"Statistical Techniques for Research Methodology"*: SQC & OR, Mumbai, October 27-30, 2017.

115. Training Programme on "*FMEA*": SQC & OR, Mumbai, held at E-biological Limited, Hyderabad, November 17, 2017.

116. Training Programme on *"Six Sigma MBB"*: SQC & OR, Mumbai, November-December, 2017.

117. Training Programme on *"Statistical Techniques for Business Forecasting"*: SQC & OR, Mumbai, December 27-29, 2017.

118. Training Programme on *"Certification Programme on Business Analytics and data Mining"*: SQC & OR, Mumbai, held at Mahindra, Kandivali, January 19-21, February 02-04, February23-25 and March 09-11, 2018.

119. Training Programme on *"Six Sigma Black Belt"*: SQC & OR, Mumbai, January-March, 2018.

120. Training Programme on *"Basic Statistical Techniques for Research"*: SQC & OR, Mumbai, held at Bajaj Corp Ltd, February, 2018.

121. Training Programme on *"Six Sigma Green Belt"*: SQC & OR, Mumbai, held at NIA Karanja, March 28-29, 2018.

122. Training Programme on "*Multimedia*" (for School Students): Reprography & Photography Unit, Library, Kolkata, January 11, 2018-February 06, 2018.

123. 8th Workshop on "*Digital Pictorial Photography and a Photography Exhibition*": Reprography & Photography Unit, Library, Kolkata, February 15–19, 2018.

124. Workshop on "*Remotely Sensed Big Data Analysis and Mining*": CSCR, Kolkata, in collaboration with Geosensing and Remote Sensing Society, Kolkata Chapter, January 23-24, 2018.

North-East Workshops and Training Programmes

1. Summer Workshop on "*Analysis and Probability (NE-SWAP 2017)*": Stat-Math Unit, Bangalore, held at Manipur University, Imphal, Manipur, July 06-10, 2017.

2. Workshop on "*Mathematical Genomics at Department of Zoology*", ASU, Kolkata, held at Sikkim University, February 19-22, 2018.

3. Lecture Series on "*Survival Analysis*", ASU, Kolkata, held at Department of Statistics, Tripura University, Agartala, March 25-27, 2018.

4. Workshop on "*Mathematical Genomics at Department of Bio Engineering and Technology*", ASU, Kolkata, held at Gauhati University, March 27-30, 2018.

5. Workshop on *"Knowledge Management and the Role of Libraries"*: AOSU, N-E Centre, Tezpur, October 31, 2017.

6. Workshop on "*Special Training and Contact Programme* (for Final-Year Post –Graduate Students)": AOSU, N-E Centre, Tezpur, December 18-29, 2017 and January 02-31, 2018.

7. Workshop on *"Students' Meet with Eminent Academicians-2018 (SMEA-2018)*", AOSU, N-E Centre, Tezpur, March 23 - 24, 2018.

8. 3rd Workshop on "*Computing: Theory and Applications*": MIU, Kolkata, in collaboration with National Institute of Technology, Meghalaya (NITM), Shillong, February 19-24, 2018.

9. Workshop on "*Modern Ecological and Agricultural Practices with Statistical Methodology and R-Software*": AERU, Kolkata in collaboration with Rajiv Gandhi University, Itanagar, Arunachal Pradesh, February 26-27, 2018.

10. Workshop on "*Statistical and Computing Methods for Life-Science Data Analysis*": BAU, Kolkata in collaboration with Department of Botany, Mizoram University, Aizawl, Mizoram, March 05-10, 2018.

11. Training Programme on "*Research Methodology Course in Social Science* (for Ph.D. Students)": ERU, Kolkata in collaboration with The Indian Council of Social Science Research (ICSSR), held at the North-East Centre, Indian Statistical Institute, Tezpur, January 15-25, 2018.

12. Workshop on "*Application of Statistics in Social Sciences' Sample size determination, Scaling techniques and reliability analysis, Factor analysis, Cluster analysis, Discriminant analysis*": SOSU, Kolkata, held, at NITAP, Yupia, Arunachal Pradesh, November 06-12, 2017.

13. Workshop on "*SQC Practices and Data Analytics*": SQC & OR, Kolkata, at held at the North-East Centre, Indian Statistical Institute, Tezpur, February 12-14, 2018.

14. Workshop on "*Six Sigma Green Belt*": SQC & OR Unit, Kolkata, March 19-23, 2018.

15. Training Program on "*Advanced Data Analysis*", SQC & OR, Bangalore, held at ICFAI University, Agartala, Tripura, November 28-30, 2017.

16. Workshop on "*Knowledge Management and the Role of Libraries*": Library Unit, North-East Centre, Tezpur, October 31, 2017.

Lectures and Seminars

Theoretical Statistics and Mathematics Division

Stat-Math Unit, Kolkata

1. Asanuma, T., University of Toyama, Japan (08.03.2018): Semi-injective local homeomorphisms from the real metric space to itself.

2. Banerjee, Kalyan, IISER, Mohali (11.04.2017, 12.04.2017 & 13.04.2017): Algebraic cycles and rationality problems.

3. Bera, Anil Kumar, University of Illinois at Urbana Champaign, USA (03.07.2017): Asymptotic Variance of Test Statistics in ML and QML Frameworks.

4. Baier, Stephan, JNU, New Delhi (12.07.2017): Moments of the error term in the Sato-Tate law for elliptic curves.

5. Banerjee, Moulinth, University of Michigan, USA (17.07.2017): Intelligent Sampling for Estimating change points in very long sequential data: A needles in a Haystack problem.

6. Bhattacharjee, Monika, University of Florida, USA (22.08.2017): Change point estimation in dynamic stochastic block model.

7. Blanc, David, University of Haifa, Israel (05.02.2018): Higher structure in algebra and algebraic topology.

8. Basu, Saugata, Purdue University, USA (19.03.2018): Quantitative bounds on the topology of semi-algebraic and definable sets.

9. Basu, Saugata, Purdue University, USA (21.03.2018): On the number of lines on projective hypersurfaces.

10. Crisp, Tyrone, Radboud University, Nijmegen, Netherlands (21.07.2017): Descent of operator modules.

11. Chakraborty, Anirvan, EPFL, Switzerland (10.08.2017): Functional Registration and Local Variation.

12. Drappeau, Sary, Aix-Marseille Universite, France (09.11.2017): Kloosterman sums over primes and Siegel zeros.

13. Drappeau, Sary, Aix-Marseille Universite, France (10.11.2017): A walk about generating series.

14. Das, Pratulananda, Jadavpur University, Kolkata (18.12.2017): Analytic P-ideals and their importance in the study of convergence.

15. Ghosh, Anish, TIFR, Mumbai (26.10.2017): Quadratic forms and ergodic theory.

16. Holkar, Rohit Dilip, IISER, Pune (05.06.2017): Locally free actions of groupoids and proper correspondences.

17. Islam, Mitul, University of Michigan Ann Arbor, USA (04.07.2017): Rigidity theorems in Geometry.

18. Jana, Subhajit, ETH, Zurich (20.07.2017): Analytic New vector Theory over Archimedean Local Fields.

19. Jha, Somnath, IIT, Kanpur (17.10.2017 & 18.10.2017): Congruent number problem.

20. Karmakar, Sayar, University of Chicago, USA (20.03.2018): Simultaneous inference on time-varying models.

21. Mawia, Ramdin, Harish Chandra Research Institute, Allahabad (12.04.2017): The distribution of values of Hardy's function.

22. Mukherjee, Mayukh, Technion, Israel (30.08.2017): Asymptotic estimates on the geometry of Laplace eigenfunctions.

23. Majee, Ananta K., University of Tubingen, Germany (09.10.2017): On stochastic optimal control in ferromagnetism.

24. Mandal, Satya, University of Kansas, USA (20.12.2017): Commutative Algebra and Algebraic K-Theory.

25. Mohari, Anilesh, IMSc, Chennai (07.03.2018): Translational invariant states and its isomorphism problem in quantum spin chain.

26. Mohari, Anilesh, IMSc, Chennai (12.03.2018): Quantum Markov States and its uses.

27. Nadkarni, M.G. (26.10.2017): Pedagogy of the Convergence Theorem.

28. Patankar, Vijay, JNU, New Delhi (06.11.2017): Distinguishing Galois representations by their normalized traces.

29. Paul, Debashis, University of California, Davis (19.02.2018): Spectral analysis of a class of high-dimensional linear processes.

30. Raghunathan, M.S., IIT, Bombay (30.06.2017): The congruence Subgroup Problem.

31. Roy, Arindam, Rice University, USA (17.07.2017): Unnormalized differences and fractional parts of zeros of the derivative of the Riemann xi function.

32. Roy, Sutanu, NIISER, Bhubaneswar (28.02.2018): Quantum symmetries of twisted tensor product of C*- algebras.

33. Ramana, S. Surya, Harish Chandra Research Institute, Allahabad (25.03.2018): Additive Energy of Dense Sets of Primes.

34. Sen, Sanchayan, McGill University, France (29.05.2017): Random structures: Phase transitions, scaling limits and universality.

35. Sengupta, Tathagata, University of Hyderabad (19.12.2017): Principal Bundles on Curves.

36. Saha, Biswjyoti, TIFR, Mumbai (04.01.2018): Multiple Stieltjes constants.

37. Sitaram, Alladi, IISc, Bangalore (26.03.2018): Lectures on Harmonic Analysis 1.

38. Sitaram, Alladi, IISc, Bangalore (27.03.2018 & 28.03.2018): Lectures on Harmonic Analysis.

Stat-Math Unit, Delhi

1. Barany, Michael, Dartmouth College, USA (28.02.2018): Organization Men: Bourbaki and the identity of international mathematicians and mathematics in the mid-twentieth century.

2. Basu, Rabeya, IISER, Pune (03.04.2017): Unification of Classical Groups.

Conferences and Seminars

3. Chaubey, Yogendra P., Concordia University, Montreal, Canada (07.02.2018): On nonparametric smooth estimators of probability density function for circular data.

4. Diener, Marc, Laboratoire Jean Dieudonné, Nice, France (10.10.2017): Microcredit: stochastic et statistical approaches for understanding and rating.

5. Diener, Francine, Laboratoire Jean Dieudonné, University of Nice, France (11.10.2017): How to fit a jump diffusion model to return prices?

6. Drappeau, Sary, University of Marseilles, France (29.11.2017): Kloosterman sums over primes and Siegel zeros.

7. Deshouillers, Jean-Marc, University of Bordeaux, France (17.04.2017): Automatic sequences and Sarnak's conjecture.

8. Deshouillers, Jean-Marc, University of Bordeaux, France (12.02.2018): Sums of powers: old and new questions, with an emphasis on the probabilistic approach.

9. David, Sinnou, Université Pierre et Marie Curie, Paris, France (14.03.2018): Bounding torsion points of abelian varieties.

10. Ganesan, Ghurumuruhan, NYU, Abu Dhabi (23.08.2017): Phase Transition in Inhomogenous Erdos Renyi random graphs.

11. Ghate, Eknath, TIFR, Mumbai (11.12.2017): From Galois Theory to Galois Representations.

12. Ghate, Eknath, TIFR, Mumbai (13.12.2017): Reductions of Galois representations and the Monomial Lattice.

13. Ghoshal, Subhashis, North Carolina State University, USA (15.12.2017): Bayesian estimation and uncertainty quantification for differential equation models.

14. Haq, Rukhsan-ul, JNCASR, Bangalore (12.04.2017): Majorana fermions and topological Quantum Computing.

15. Hallin, Marc, ECARES and Departement de Mathematique, Universite libre de Bruxelles, Belgium (15.02.2018): On Multivariate Distribution and Quantile Functions, Ranks and Signs: a Measure Transportation Approach.

16. Kovse, Matjaz, University of Maribor, Slovenia and Indian Institute of Technology, Bhubaneswar (27.09.2017): Vertex Decomposition of Steiner Wiener Index and Steiner Betweenness Centrality.

17. Mubayi, Dhruv, University of Illinois, Chicago (05.07.2017): New Developments in Hypergraph Ramsey Theory.

18. Mesnager, Sihem, Universities of Paris VIII and Paris XIII LAGA (CNRS) and Telecom Paris Tech, France (09.10.2017): Hyper-bent and generalized hyper-bent functions.

19. Mallick, Bani, Texas A&M University and U.S. Fulbright-Nehru Distinguished Chair, National Institute of Biomedical Genomics, Kalyani, West Bengal (12.12.2017): Bayesian Gaussian Graphical Models and their extensions.

20. Mallick, Anish, ICTS-TIFR, Bangalore (17.01.2018): Multiplicity of spectrum for certain class of random operators.

21. Paul, Debashis, UC Davis, USA (26.07.2017): Spectral analysis of high-dimensional linear processes with applications.

22. Ranjan, Pritam, IIM, Indore (03.05.2017): Computer Experiments – A Brief Overview.

23. Reddy, Tulasi Ram, New York University, Abu Dhabi, UAE (26.10.2017): On critical points of random polynomials.

24. Roy,Rishideep, IIM, Bangalore (21.03.2018): Extremes of log-correlated Gaussian fields.

25. Sharma, Divyum, University of Waterloo, Canada (26.04.2017): On the multi-base representation of integers.

26. Stigler, Stephen, University of Chicago (08.12.2017): Mahalanobis and Fisher: Mathematical Statistics as a Global Enterprise.

27. Sofi, Mohammad Amin, University of Kashmir (21.02.2018): Continuous selections involving the non-linear Hahn Banach theorem.

28. Saikia, Neelam, IIT, Guwahati (25.04.2018): Certain Character sums, hypergeometric series, and their connections to algebraic curves.

29. Toth, Balint, Renyi Institute of Mathematics, Budapest, Hungary and School of Mathematics, University of Bristol, UK, (08.03.2018 & 09.03.2018): Invariance principle for the random Lorentz gas beyond the Boltzmann-Grad (Gallavotti-Spohn) limit.

30. Waldschmidt, Michel,University of Jussieu, Paris, France (13.09.2017):Representation of positive integers by binary cyclotomic forms.

Stat-Math Unit, Bangalore

1. Accardi, Luigi, Centro Interdipartimentale Vito Volterra, Italy (13.03.2018, 15.03.2018, 20.03.2018, 22.03.2018 & 27.03.2018): Quantum decomposition of classical random variables.

2. Banerjee, Arindam, Purdue University, USA (13.06.2017 & 20.06.2017): Dualizing Complexes in the Noncommutative Arithmetic Context & Homological Invariants and Combinatorics of Finite Simple Graphs.

3. Bhattacharya, Prasit, University of Notre Dame, USA (06.07.2017): Recent progress towards the telescope conjecture.

4. Bhattacharya, Siddartha, TIFR, Mumbai (31.10.2017): Translational tilings of the plane.

5. Basu, Riddhipratim, ICTS, Bangalore (28.11.2017): Longest Increasing Subsequence Under Curvature Constraint.

6. Baryshnikov, Yuliy, University of Illinois, Urbana-Champaign, USA (08.02.2018): Disappearing coefficients and lacunae for hyperbolic polynomials.

7. Bhar, Suprio, TIFR-CAM, Bangalore (19.02.2018): Stochastic PDEs in S' for SDEs driven by Levy noise.

8. Barma, Mustansir, TIFR Centre for Interdisciplinary Sciences, Hyderabad (23.02.2018): Away from the Average: The Physics of Fluctuations.

Conferences and Seminars

9. Chhetri, Maya, UNC Greensboro Greensboro, North Carolina, USA (12.05.2017): Asymptotically linear systems.

10. Chakraborty, Anirvan, École polytechnique fédérale de Lausanne, Switzerland (17.08.2017): Functional Registration and Local Variation.

11. Calder, Nigel S., University of Waikato, New Zealand (05.09.2017): Using mobile technologies to enhance the learning of mathematics.

12. Chandgotia, Nishant, Tel Aviv University, Israel (12.10.2017): Irrational rotations; random affine transformations and the central limit theorem.

13. Chandrasekhar, C.P., Center for Economic Studies and Planning, JNU (23.01.2018): The contradictions of neoliberalism - Interpreting India's banking crisis.

14. Dasgupta, Aparajita, Imperial College, London (16.08.2017): Pseudo-differential Operators on Compact Lie Groups.

15. Deshpande, Amit, Microsoft Research (12.02.2018): Constrainted Determinantal Point Processes.

16. Fakhruddin, Najmuddin, TIFR, Mumbai (06.04.2017): Affine Grassmannians; affine flag varieties and local models.

17. Gupta, Anil, IIM, Ahmedabad and Honey Bee Network (07.11.2017): Modelling and research gaps in inclusive innovation research.

18. Gadgil, Madhav, National Centre for Cell Science, Maharastra (16.01.2018): Use and abuse of knowledge.

19. Hallin, Mark, Université Libre de Bruxelles, Belgium (13.02.2018): P.C. Mahalanobis memorial.

20. Ile, Runar, Norwegian Business School, Norway (27.11.2017): Flops as blowing-ups in maximal Cohen-Macaulay modules.

21. Jayaraj, Nandita, The Life of Science Project (10.10.2017): The invisible women of Indian science.

22. Kaur, Jotsaroop, IISER, Bhopal (07.09.2017): Localisation of Bochner Riesz means on sets of positive Hausdorff dimension in $\mathbb{R}^d$.

23. Mukherjee, Mayukh, Technion, Israel (03.08.2017): Asymptotic estimates on the geometry of Laplace eigenfunctions.

24. Mallick, Anish, ICTS-TIFR, Bangalore (09.11.2017): Multiplicity theorem of singular Spectrum for general Anderson type Hamiltonian.

25. Madan, Amman, Azim Premji University, Bangalore (06.3.2018): Identity politics in school curricula: post-modernism and the problem of academic knowledge.

26. Nayak, Narendra, FIRA, Mangalore (20.08.2017): The case for scientific temper article 51ah of the Constitution of India.

27. Pattabhiraman, Shankar, Beckman Coulter Inc Bangalore Development Centre (11.04.2017): DNA Genes and disease.

28. Parthasarathy, Aprameyan, Paderborn University, Germany (27.07.2017): Boundary values; resonances and scattering poles on rank one symmetric spaces.

29. Pal, Soumik, University of Washington, USA (20.09.2017): Shuffling cards by spatial motion.

30. Parameswaran, A.J., TIFR, Mumbai (28.09.2017): Fundamental Group and Fundamental Group Scheme.

31. Ravi, Charanya, University of Oslo, Norway (24.08.2017): An equivariant analog of the Bass-Quillen conjecture.

32. Rangarajan, Bharatram, Chennai Mathematical Institute, Chennai (21.11.2017): Ihara-Bass Theorem for the Zeta Function of a Graph and the Ramanujan Property.

33. Sivaguru, R., TIFR, Mumbai (06.04.2017): Geometry and Function Theory in Several Complex Variables.

34. Sen, Sanchayan, McGill University, Canada (01.06.2017): Random structures: Phase transitions; scaling limits; and universality.

35. Shenoy, Vijay B., IISc, Bangalore (03.10.2017 and 04.10.2017): Topology of Electronic Phases and The Tenfold Way to Amorphous Topological Insulators.

36. Singhal, L., TIFR, Mumbai (19.10.2017): Cylinder absolute games on solenoids.

37. Shekhar, Sudhanshu, IIT, Kanpur (26.10.2017): Non-commutative Twisted Euler characteristic in Iwasawa theory.

38. Shekhar, Atul, KTH, Stochholm (22.01.2018): Holder exponents for Loewner traces.

39. Sandeep, K., TIFR-CAM, Bangalore (01.02.2018): Extremals of inequalities and their uniqueness.

40. Sharada, B.N., Parivarthan, Bangalore (06.02.2018): Substance Use & Abuse: Consequences and Risks.

41. Sinha, Kaneenika, IISER, Pune (12.02.2018): Pair correlation for Hecke eigenvalues.

42. Soulier, Philippe, University Paris Nanterre, France (15.02.2018): An invariance principle for sums and record times of regularly varying stationary sequences.

43. Sinha, Kalyan B., JNCASR, Bangalore (15.03.2018): Martingale problem in Quantum Probability.

44. Saha, Arnab, Australian National University, Canberra (14.03.2018): Isocrystals associated to arithmetic jet spaces of abelian schemes.

45. Sane, Sarang, IIT, Madras (20.03.2018 & 22.03.2018): The Pfaffian of a matrix and unimodular rows & Specialization closed subsets; thick subcategories and Cohen-Macaulay rings.

46. Sood, Ajay K., Indian National Science Academy, IISc, (27.03.2018): Exciting Physics Inspired by Nature: Flocking and Bacterial Heat Engine.

47. Thirunellai, Rajamani Kumar, Robert Bosch Engineering and Business Solutions Ltd (18.04.2017): Computer Aided Diagnosis using Machine Learning Approaches.

Conferences and Seminars

48. Thattai, Mukund, National Centre for Biological Sciences, Bangalore (17.10.2017): Possible and Impossible Cells.

49. Thoppe, Gugan, Technion, Israel Institute of Technology, Israel (28.11.2017): Betti Numbers of Gaussian Excursions in the Sparse Regime.

50. Toth, Balint, University of Bristol, UK and Alfred Renyi Institute of Mathematics, Budapest, Hungary (12.03.2018): Ashok Maitra Memorial.

51. Toth, Balint, University of Bristol, UK and Alfred Renyi Institute of Mathematics, Budapest, Hungary (13.03.2018): Erdos-Renyi random graphs + forest fires = self-organised criticality.

52. Vadlamani, Sreekar, TIFR CAM, Bangalore (04.04.2017): Integral geometry: at the crossroads of geometry and measure theory.

53. Vyas, Rishi, Ben Gurion University, Israel (15.06.2017): A noncommutative Matlis-Greenlees-May equivalence.

Applied Statistics Division

Applied Statistics Unit, Kolkata

1. Banerjee, Moulinath, Department of Statistics, University of Michigan, USA (25.07.2017): Divide and Conquer in Non-Standard Problems.

2. Basu, Pallab, International Centre for Theoretical Sciences, Bengaluru (08.11.2017): Understanding the nature of Micro-RN.

3. Bandyopadhyay, Prasanta, Department of History and Philosophy, Montana State University, USA (14.12. 2017): Simpson's Paradox: Logic, Philosophy, and a Dash of History.

4. Chaubey, Yogendra P, Department of Mathematics and Statistics Concordia University, Montreal, Canada (10.01.2018): On nonparametric smooth estimators of probability density function for circular data.

5. Datta, Jyotishka, Department of Mathematical Sciences University of Arkansas at Fayetteville, USA (10.01.2017): Sparse signal recovery and default Bayesian analysis using global-local shrinkage priors.

6. Hassan, Sk. Sarif, Department of Mathematics, Pingla Thana Mahavidyalaya, Vidyasagar University, West Bengal (17.12.2017): Dynamical Systems in Biology Problems.

7. Karjee, Jyotirmoy, TCS Research & Innovation, Bangalore (18.04.2017): Statistical Analysis of Network Data in Cloud platform for Internet of Things Applications.

8. Shukla, Ankur, Department of Applied Mathematics, Indian Institute of Technology (ISM), Dhanbad (20.06.2017): Reliability Analysis and Faults Prediction during the Development Phase of Software.

9. Majumdar, Anandamayee, Center for Advanced Statistics and Econometrics, Soochow University, Suzhou, China (19.04.2017): Gradients in Spatial Response Surfaces with Application to Urban Land Values.

10. Narisetty, Naveen, Department of Statistics, University of Illinois at Urbana-Champaign, USA (14.08.2017): Consistent and Scalable Bayesian Model Selection for High Dimensional Data.

11. Nandy, Rajesh Ranjan, School of Public Health, UNT Health Science Center, USA (12.12.2017): Independent Component Analysis in the presence of unknown correlated Gaussian noise.

12. Paul, Debashis, Department of Statistics, University of California, Davis, USA (03.01.2017): Modeling non-Gaussian processes on a sphere using multi-resolution analysis.

13. Panda, Mahesh Kumar, Department of Statistics, Central University of Orissa, Odisha (22.06.2017): Exact designs for polynomial regression in view of de la Garza phenomenon.

14. Sengupta, Srijan Department of Statistics, Virginia Tech, USA (11.07.2017): A blockmodel for node popularity in networks with community structure.

Interdisciplinary Statistical Research Unit, Kolkata

1. Datta, Gauri Shankar, University of Georgia, USA (28.06.2017): Robust Hierarchical Bayes Small Area Estimation for Nested Error Regression Model.

2. Dutta, Somak, Iowa State University, USA (03.08.2017): Bayesian spatial variable selection methods for detecting activation regions in fMRI studies.

3. Ghosh, Abhik, University of Oslo, Norway (21.09.2017): A General Robust Bayes Pseudo-Posterior: Exponential Convergence results with Applications.

4. Kuchibhotla, Arun Kumar, University of Pennsylvania, USA (11.01.2018): Uniform Linear Representation results for High-dimensional Generalized Linear Model.

5. Mukherjee, Soumendu Sundar, University of California, Berkeley (15.06.2017): Scalable and fast community detection using divide and conquer techniques.

6. Mukherjee, Partha Sarathi, Boise State University, USA (19.12.2017): A Multi-resolution and Adaptive Image Denoising Framework.

7. Majumder, Subho, University of Florida, USA (21.12.2017): Fast and General Best Subset Selection using Data Depth and Resampling.

8. Roy, Vivekananda, Iowa State University, USA (21.06.2017): Convergence analysis of block Gibbs samplers for Bayesian probit linear mixed models.

9. Rao, Arni S.R. Srinivasa, Augusta University, Georgia, USA (12.01.2018): From Fibonacci to Alfred Lotka and beyond: Modelling the dynamics of population and age-structures.

Applied Statistics Unit, Chennai

1. Chakraborty, Partha Sarathi, The Institute of Mathematical Sciences, Tamil Nadu (01.09.2017): Fun with Probability.

2. Deshpande, Jayant V., Chennai Mathematical Institute, Chennai, Tamil Nadu (21.04.2017): Some issues in Reliability Theory.

3. Dasgupta, Shibasish, Global Data Insight & Analytics, Ford Motor Private Limited (12.01.2018): A Bayesian Predictive Approach to Design Studies for Comparing Biomarkers.

4. Das, Purba, Chennai Mathematical Institute, Chennai, Tamil Nadu (06.04.2018): Understanding Sea Ice Melting via Functional Data Analysis.

5. Ghosh, Sibasish, The Institute of Mathematical Sciences (IMSc), Tamil Nadu (02.03.2018): Witnessing arbitrary bipartite entanglement in a measurement-device-independent way.

6. Gupta, Ashmita, Wageningen University, Netherlands (09.03.2018): Female labor as insurance: Trade Liberalization and Female Labor Force Participation in India.

7. Hallin, Marc, European Center for Advanced Research in Economics and Statistics (ECARES), Belgium (09.02.2018): On Multivariate Distribution and Quantile Functions, Ranks and Signs: A measure transportation approach.

8. Krishnan, T., Chennai Mathematical Institute, Tamil Nadu (16.02.2018): Basics of EM Algorithm.

9. Krishnan, T., Chennai Mathematical Institute, Tamil Nadu (16.03.2018): Basics of EM Algorithm.

10. Krishnan, T., Chennai Mathematical Institute, Tamil Nadu (23.03.2018): Statistics: Some caveats.

11. Ramasubramanian, S., Chennai Mathematical Institute (08.09.2017): Cramer-Lundberg model revisited.

12. Rao, B.V., Chennai Mathematical Institute, Tamil Nadu (02.02.2018): Urn Models.

13. Rao, B.V., Chennai Mathematical Institute, Tamil Nadu (16.02.2018): Random Walk.

14. Rao, B.V., Chennai Mathematical Institute, Tamil Nadu (16.03.2018): Brownian Motion.

15. Rao, B.V., Chennai Mathematical Institute, Tamil Nadu (23.03.2018): Martingales.

Applied and Official Statistics Unit, Tezpur

1. Bhattacharyya, Dhruba Kumar, Tezpur University, Tezpur (09.10.2017): Big Data Analytics in Bioinformatics: A Machine Learning Perspective.

2. Baruah, Nayandeep Deka, Tezpur University, Tezpur (27.10.2017): Srinivasa Ramanujan: A Glimpse of His Life and Mathematics.

3. Lahkar, Ratul, IIM Udaipur, Udaipur (10.10.2017): Game Theory: Nash Equilibrium and Interpretation.

4. Mohan, Manju, IIT Delhi, Delhi (03.04.2017): Concept Note on Combating Air Pollution in Urban Airsheds of India.

5. Sumesh, S.S., Tezpur University, Tezpur (30.08.2017): Social Contours of Farmer Suicides in Neo-Liberal India.

6. Sahoo, Sambhunath, Tezpur University, Tezpur (31.10.2017): Knowledge management in today's libraries.

7. Yumnam, Veda, Tezpur University, Tezpur (15.12.2017): Unpacking Health Equity in Conflict Affected Areas: A Social Determinants Framework.

Computer and Communication Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata

1. Bhattacharya, Anup, IIT, Delhi (10.11.2017): Approximate Clustering with Same-Cluster Queries.

2. Bhowmik, Anusua, AMD, Bangalore (12.12.2018): AMD's Ryzen Processor Microarchitecture.

3. Bose, Pradip, IBM, USA (12.01.2018): System Architectural Support for Mobile Cognition.

4. Das Choudhury, Sruti, University of Nebraska-Lincoln, USA (28.11.2017): Intelligent Image Analysis for Plant Phenotyping.

5. D'Souza, Deepak, IISc, Bangalore (20.02.2018): Horn-ICE Learning for Invariant Synthesis.

6. Ditmarsch, Hans Van, CNRS (French National Research Organization), LORIA, France (08.03.2018): Protocols and the Logic of Knowledge.

7. Fujita, Masahiro, University of Tokyo, Japan (27.04.2017): Very efficient power gating for higher performance computing.

8. Kolay, Sudeshna, TU Eindhoven, Netherlands (05.01.2018): Kernelization in Incidence geometry.

9. Majumdar, Shikharesh, Carleton University, Canada (10.01.2017): Resource Management on Clouds for Supporting Big Data Platforms and Smart Systems.

10. Maheswari. Anil, Carleton University, Ottawa, Canada (06.02.2018): Faster algorithms for some optimization problems on collinear points.

11. Pande, Partha Pratim, Washington State University, USA (25.07.2017): Going Vertical: Energy-Efficient and Reliable Manycore Computing based on 3D Integration.

12. Pach, Janos, EPFL Lausanne and Renyi Institute, Budapest (16.01.2018): Order and disorder: A precarious balancing act.

13. Pravakar, Pavithra, Kansas State University, USA (17.01.2018): Formal Verification of Robustness Properties of Hybrid Systems.

14. Pach, Janos, EPFL Lausanne and Renyi Institute, Budapest (19.01.2018): New Crossing Lemmas.

15. Sarkar Arnab, IIT, Guwahati, (08.06.2017): Optimal Scheduling of Real-time Tasks using Supervisory Control of Timed DES.

16. Saurabh, Saket, Institute of Mathematical Science, Chennai, Tamil Nadu (02.01.2018): Exact Algorithms via Monotone Local Search.

17. Sen, Sandeep, IIT, Delhi (25.02.2018): Randomized techniques in algorithm design.

Conferences and Seminars

18. Ukil, Abhisek, University of Auckland, New Zealand (30.01.2018): Smart Grid, Energy Efficiency, and Machine Learning Applications.

19. Valtr, Pavel, Charles University, Prague (20.02.2018): On the maximum crossing number.

20. Wille, Robert, Johannes Kepler University Linz, Austria (28.03.2018): Quantum Computation: Prospects and Challenges.

Electronics and Communication Sciences Unit, Kolkata

1. Agarwal, S., TCS, Kolkata (19.06.2017): 3-D Registration.

2. Chakraborty, R., McGovern Institute for Brain Research, MIT, USA (20.02.2018): A Geometric framework for statistical analysis of trajectories of distinct temporal spans.

3. Dhara, B.C., Jadavpur Unversity, Kolkata (15.06.2017): Image Security: Secret Image Sharing, Image Encryption and Image Steganography.

4. Karan, S., Calcutta Telephones, Kolkata (06.03.2018): Some Studies on Nanoparticles and Image Analysis.

5. Majumdar, A., IIIT, Delhi (20.06.2017): Dictionary Learning.

6. Mondal, S., Clarkson University, New York (05.01.2018): Cell Dynamics Analysis to Assess Hypoxic Damage and Recovery.

7. Purkait, P., Toshiba Research Europe Ltd., Cambridge, UK (03.07.2017): Single-frame Rolling Shutter Compensation.

8. Zafar, H., Rice University, USA (29.01.2018): Probabilistic Models and Inference Algorithms for Single-cell Genomics: Applications in Cancer Evolution.

Machine Intelligence Unit, Kolkata

1. Ahuja, Narendra, Department of Electrical and Computer Engineering, Beckman Institute and Coordinated Science Laboratory, University of Illinois, Urbana-Champaign (23.03.2018): The Fun and Fulfillment Research can Bring to Life: Examples From Computer Vision (Video Conference)

2. Banerjee, Mohua, Department of Mathematics and Statistics, Indian Institute of Technology, Kanpur (23.03.2018): Information systems, Updates and Logic.

3. Chaudhuri, Parag, Indian Institute of Technology, Bombay (28.03.2018): Populating Virtual Worlds: Characters and Physics.

4. Ghosh, Debdas, Indian Institute of Technology (BHU), Varanasi (09.03.2018): Fuzzy ideal cone method for capturing the entire fuzzy non-dominated set of a fuzzy multi-criteria optimization problem.

5. Mandal, Gautam, Tata Institute of Fundamental Research, Mumbai (23.03.2018): The arrow of time.

6. Ranka, Sanjay, Department of Computer Information Science and Engineering, University of Florida, USA (23.03.2018): Smart Algorithms for Transportation Applications.

7. Saha, Sudipto, Bose Institute, Kolkata (15.02.2018): Systematic discovery of novel linear motifs mediating protein-protein interactions.

8. Saha, Ratan K., IIIT, Allahabad (21.03.2018): Imaging and characterization of biomedical samples with photoacoustics.

Systems Science and Informatics Unit, Bangalore

1. Frery, A.C., Instituto de Computação, Universidade Federal de Alagoas, Maceió, Brazil, (12.02.2018): Statistical Information Theory and Geometry for SAR Image Analysis.

Computer Science Unit, Chennai

1. Akhtar, Nasim, Indian Institute of Technology, Guwahati (12.05.2017): Dimensions of the Graphs of Alpha-Fractal Interpolation Functions.

2. Chakraborti, Anirban, Jawaharlal Nehru University, New Delhi (22.12.2017): Socio-economic inequalities: Can humans be modeled like atoms?

3. Gowda, M. Seetharama, University of Maryland, Baltimore County (23.11.2017): The Lyapunov rank of a proper cone.

4. Ravishanker, Nalini, University of Connecticut, USA (15.12.2017): Modeling Financial Durations Using Penalized Estimating Functions.

5. Tangirala, Arun K., Department of Chemical Engineering, IIT, Madras (06.10.2017): Data-driven reconstruction of causal graphs for multivariate stationary processes.

Physics and Earth Sciences Division

Geological Studies Unit, Kolkata

1. Bhattacharya, S.K., Research Centre for Environmental Changes, Academia Sinica, Taipei, Taiwan (04.08.2017): Stable isotope geochemistry and its application in natural sciences.

2. Basilici, Giorgio, University of Campinas, Brazil (18.12.2017): How and where Titanosaurs laid their eggs in Argentina?

3. Basilici, Giorgio, University of Campinas, Brazil (19.12.2017): Were Precambrian deep-water deposits similar to Phanerozoic analogous?

4. Elzbieta, M. Teschner, Opole university, Poland (26.02.2018): Insight into the Late Triassic localities of Krasiejow, SE Poland: Geological and Paleontological Excursion.

5. Hofmann, Axel, University of Johannesburg, South Africa (08.03.2018): Surface Processes on Early Earth.

Conferences and Seminars

6. Hughes, Nigel, University of California, USA (Riverside) (26.03.2018): Ups and downs in the Himalaya using fossils to decipher its history and role of fossils in scientific outreach in rural Bengal.

7. Walter, J., University of Fribourg/Freiburg, Switzerland (16.01.2018): New Insight into Basal Turtle Evolution.

Physics and Applied Mathematics Unit, Kolkata

1. Aluri, Pavan, Kumar, KIAS, South Korea (19.09.2017): Estimating hidden signals violating isotropy underlying CMB maps.

2. Bose, Debanjan, Sung Kyun Kwan University, South Korea (20.04.2017): Highlights from icecube neutrino observatory.

3. Bera, Manabendra Nath, Spain (25.10.2017): Universal laws of thermodynamics.

4. Bagchi, Manjari, Institute of Mathematical Science, Chennai (15.02.2018): Exotic pairs of stellar undead : binary radio pulsars with compact companions.

5. Feudel, Ulrikr, University of Oldenburge, Germany (07.12.2017): Critical transitions due to shocks.

6. Freund, Jan, University of Oldenburg, Germany (07.12.2017): Granger causality of diffusion processes.

7. Ghosh, Sibasish, The Institute of Mathematical Sciences, Chennai (25.08.2017): On thermalization of two-level quantum systems.

8. Ghoshal, Anish, INFN, Laboratori Nazionali di Frascati, Italy (28.02.2018): Dark photon searches and bounds: Resonant production in beam dump for 8Be anomaly.

9. Kar, Satyaki, Indian Association for the Cultivation of Science, Jadavpur (07.07.2017): Periodically driven dynamics using two-rate protocols.

10. Kapitaniak, Tomasz, Lodz University of Technology, Poland (07.12.2017): The search for the smallest chimera.

11. Rana, Swapan, ICFO–The Institute of Photonic Sciences, Barcelona, Spain (19.02.2018): Coherence Theory: from resource-theoretic perspective.

12. Saha, Debashis, Institute of Theoretical Physics and Astrophysics, Gdansk, Poland (91.09.2017): State independent contextuality advances one-way communication.

Biological Sciences Division

Agricultural and Ecological Research Unit, Kolkata

1. Bramhachari, Ratanlal, Dept. of Chemistry, Rajabazar Science College, Kolkata (30.11.2018): Brain, Nerve and Signalling System in Plants and Why Sex, An Unnecessary Item, Arose At All.

2. Chakraborty, Subhendu, Centre for Ocean life, DTU Aqua, National Institute of Aquatic Resources, Technical University of Denmark (08.01.2018): A New Approach to Trait-based Plankton Modelling.

3. Karanth, Praveen, IISC, Bangalore (06.03.2018): Dispersal vs. Vicariance: The origin of India's extant tetrapod fauna.

4. Sarkar, Ramrup, CEPD, CSIR – National Chemical Laboratory, Pune (23.08.2017): Systems Biology of Leishmaniasis: Genome to Population.

5. Schreiber, Igor, ICE, Prague, Czech Republic (12.01.2018): Chemical Process Modelling.

Human Genetics Unit, Kolkata

1. Biswas, Roopa, Dept. of Anatomy, Physiology and Genetics, University of the Health Sciences, Bethesda, MD, West Bengal (05.12.2017): Innovations in Cancer Research: RNA-based Therapeutics for Prostate Cancer.

2. Majumder, Arunabha, Department of Biostatistics, UCLA, Los Angeles (09.01.2018): An efficient Bayesian meta-analysis approach for studying cross-phenotype genetic associations.

Social Sciences Division

Economic Research Unit, Kolkata

1. Bera, K. Anil, Department of Economics, University of Illinois, Urbana Champaign, USA (22.06.2017): Testing/Tasting Spatial Models: A Specification Search Approach.

2. Basuchoudhary, Atin, Virginia Military Institute, Lexington, VA (27.07.2017): Using Machine Learning to Predict Conflict.

3. Brueckner, Markus, Australian National University, Australia (07.12.2017): Inequality and Economic Growth: the Role of Initial Income.

4. Bag, Primal, Department of Economics, National University of Singapore, Singapore (28.12.2017): Project Implementation and Unrewarded Talent.

5. Bhattacharjee, Arnab Professor of Economics and Director, Spatial Economics & Econometrics Centre (SEEC), Heriot-Watt University, Edinburgh, United Kingdom (22.03.2018): How (Not) to do the Cholesky Decomposition: or, How Does the UK Economy Respond to International Shocks?

6. Chatterjee, Chirantan, Economics & Public Policy, Indian School of Business, Knowledge City, Sector 81, SAS Nagar, Mohali, Punjab (15.06.2017): IPR and Organization of Knowledge: New Evidence from India.

7. Chatterjee, Kalyan, Department of Economics, The Pennsylvania State University, University Park, PA, USA (07.07.2017): On Interim Rationality, Belief Formation, and Learning in Decision Problems with Bounded Memory.

8. Dutta, Souvik, Indian Institute of Management, Bangalore (18.05.2017): Social Reform as Path to Political Leadership: A Dynamic Model.

Conferences and Seminars

9. Das, Somnath, Department of Economics, Purdue University, USA (24.08.2017): Effect of Merger on Market Price and Product Quality: American and US Airways.

10. Dutta, Bhaskar, Department of Economics, University of Warwick, UK and Ashoka University, Haryana (01.11.2017): Coalition Formation and History Dependence.

11. Dietrich, Franz Paris School of Economics, CNRS, France (20.02.2018): A Theory of Bayesian Groups.

12. Ferrero, Mario, Department of Economic, University of Eastern Piedmont, Italy (12.10.2017): Incentives Beyond the Grave.

13. Ferrero, Mario, Department of Economic, University of Eastern Piedmont, Italy (02.11.2017): The Economics of Religion: An Overview of Research.

14. Ferrero, Mario, Department of Economic, University of Eastern Piedmont, Italy (09.11.2017): Divine Competition in Greco-Roman Polytheism.

15. Lahkar, Ratul, Department of Economics, Indian institute of Management, Udaipur (16.10.2017): An Evolutionary Analysis of Growth and Fluctuations with Negative Externalities.

16. Lahiri, Sajal, Department of Economics, Southern Illinois University, U.S.A. (21.12.2017): Why Direct Counter-Terror Measures Only May Fail.

17. Mukherjee, Conan, Indian Institute of Technology, Bombay (01.06.2017): On Evaluating Authors' Performance by Publications: An Axiomatic Study.

18. Nath, Swaprava, Indian Institute of Technology, Kanpur (28.02.2018): Surprise in Elections.

19. Ranjan, Abhishek, Department of Management Engineering, Technical University of Denmark (03.08.2017): Vickrey Meets Alonso: Commute Scheduling and Congestion in a Monocentric City.

20. Shah, Ajay, National Institute for Public Finance and Policy, New Delhi (08.08.2017): Data-driven Techniques in Measuring the Exchange Rate Regime.

21. Saha, Shrabani, Lincoln International Business School, University of Lincoln, United Kingdom (10.08.2017): The Impact of National Institutional Quality on International Tourism Inflows: Cross-Country Evidence.

Linguistic Research Unit, Kolkata

1. Barlow, Michael, Applied Linguistics Studies, University of Auckland, New Zealand (02.03.2018): How to use NLP Toolkits in analysis of corpus texts.

2. Ehsanul, Kabir, Mitcham Institute, Victoria, Australia (08.11.2017): The state and status of language technology works in Bangla language.

3. Santosh, T.S., Institute of English Teaching, Muscat, Oman (21.06.2017): Some new methods of Computer Assisted language Teaching.

4. Warsi, M. Jahangir, Washington University of St. Luis. USA (12.07.2017): Linguistic diversities in texts used in social networking communication.

Population Studies Unit, Kolkata

1. Chattopadhyay, Kiranmoy, Department of Statistics, Bidhannagar College, Kolkata (07.12.2017): Estimation of Error in Census or Vital Events Coverage: A New Capture-Recapture Model.

2. Kanjilal, Barun, Indian Institute of Health Management Research, Rajasthan (IIHMR) (23.03.2018): Transformation in Indian Healthcare Market: some recent evidences.

3. Mukhopadhyay, Simantini, Institute of Development Studies, Kolkata (15.03.2018): How misleading is self-reported morbidity? Revisiting Sen's positional objectivity.

4. Raut, Lakshmi Kant, Indian Institute of Management, Udaipur, Rajasthan, (02.05.2017): Early Childhood Development, Earnings Inequality and Social Mobility in an Educational Signaling Model.

5. Yadav, Ashish Kumar, ESI-Post Graduate Institute of Medical Sciences & Research, Kolkata, (09.02.2018): Child Survival: An Epidemiological Understanding using Survival Models.

Sampling and Official Statistics Unit, Kolkata

1. Lahiri, Partha, University of Maryland, USA (05.09.2017): Small Area Estimation: An Introduction.

Economics and Planning Unit, Delhi

1. Anukriti, S, Boston College, USA (21.07.2017): On the Quantity and Quality of Girls: New Evidence on Abortion, Fertility, and Parental Investments.

2. Bhalla, Manaswini, IIM, Bangalore (05.05.2017): The Business of Religion and Caste in India.

3. Bhadury, Soumya Suvra, National Council of Applied Economics Research, New Delhi (19.05.2017): Has Money Lost Its Relevance? Resolving the Exchange Rate Disconnect Puzzle in the Small, Open Economies.

4. Bluffstone, Randall A., Portland State University, United States (23.02.2018): If People Pay for Improved Biomass Stoves, Do they Use Them More Frequently? Evidence from a Field Experiment in Ethiopia.

5. Bhargava, Alok, University of Maryland, USA (06.03.2018): Climate variability, rice production and groundwater depletion in India.

6. Chakraborty, Pavel, Jawaharlal Nehru University, New Delhi (27.10.2017): IPR and Organization of Knowledge.

7. Chaudhuri, Ritwik, IBM Research (19.01.2018): Study of evolution of cooperation in a peer influence based network.

8. Dasgupta, Kunal, University of Toronto, Canada (21.04.2017): Distribution Costs, Product Quality, and Cross-Country Income Differences.

9. Dubey, Pradeep, Stony Brook University,USA (23.05.2017): Insurance contracts with competitive pooling.

Conferences and Seminars

10. Dutta, Bhaskar, University of Warwick, UK and Ashoka University, Haryana (01.09.2017): Coalition Formation and History Dependence.

11. Das, Mausumi, Delhi School of Economics, Delhi (03.11.2017): Culture & Market: A Macroeconomic Tale of Two Institutions.

12. Deb, Rahul, University of Toronto, Canada (29.08.2017): Evaluating Strategic Forecasters.

13. Das, Sanjukta, NCAER, New Delhi (02.02.2018): Whose Right Is It Anyway? Welfare Implications of Food Security Programs.

14. Dutta, Bhaskar, Ashoka University, Hariyana (16.03.2018): Efficient Partnership formation in networks.

15. Halevy, Yoram, University of British Columbia, British Columbia and University of Toronto, Canada (22.02.2018): Behavioral Bargaining.

16. Hassler, John, IIES, Stockholm University, Sweden (22.03.2018): Integrated Assessment in a Multi-region World with Multiple Energy Sources and Endogenous Technical Change.

17. Javadekar, Apoorva, CAFRAL, Maharashtra (07.09.2017): Mutual Fund Flows and Fund's Strategic Behavior When Investors Are Inattentive.

18. Juneja, Sandeep, TIFR, Mumbai (10.01.2018): Credit Risk: Simple Closed Form Approximate Maximum Likelihood Estimator.

19. Kishore, Kaushal, University of Pretoria, South Africa (07.04.2017): Dynamic Tax Competition, Home Bias and the gain from Non-preferential Taxation Regimes: A case for unilateral commitment.

20. Krishnapriya, P.P. Delhi School of Economics, Delhi (04.05.2017): Effects of information on energy related choices: Experimental evidence from rural Uttar Pradesh and Kerala.

21. Kacker, Kanishka, World Bank (29.05.2017): Does Regulation distort Costs? Reassessing evidence from the US Electricity Industry.

22. Kochhar, Nishtha, Georgetown University, USA (18.08.2017): Jati inequality in rural India.

23. Lahiri, Amartya, University of British Columbia, British Columbia & CAFRAL, Maharastra (15.09.2017): Urbanization, Structural Transformation and Rural-Urban Disparities in China and India.

24. Morduch, Jonathan, NYU, USA (26.07.2017): Poverty and Migration in the Digital Age: Experimental Evidence on Mobile Banking in Bangladesh.

25. Mani, Subha, Fordham University, USA (04.08.2017): Cognitive, Socioemotional, and Behavioral Returns to College Quality.

26. Moorthy, Sridhar, University of Toronto, Canada (08.11.2017): Advertising strategy in the presence of reviews: an empirical analysis.

27. Mookherjee, Dilip, Boston University, USA (07.03.2018): Communities, Networks and Development.

28. Maniquet, François, UC Louvain, Belgium (19.03.2018): Condorcet consistency in large elections with boundedly rational voters.

29. Nath, Swaprava, Carnegie Mellon University, USA (07.07.2017): Surprise in Elections.

30. Pant, Manoj, Jawaharlal Nehru University, New Delhi (06.10.2017): Coincident Indicators and Forecasting in Economics using EEDM Analysis: A Study of the IIP.

31. Raghavan, Madhav, HEC, University of Lausanne, Switzerland (12.01.2018): Priority Rules in Project Allocation.

32. S, Aney, Madhav, Singapore Management University, Singapore (28.04.2017): Corruption in the Supreme Court of India.

33. Sarkar, Sumit, University of Texas, Dallas (13.10.2017): Know When to Run: Making Recommendations in Crowdsourcing Contests.

34. Serizawa, Shige, Osaka University, Japan (20.03.2018): Minimum price Walrasian equilibrium for general preferences: Serial Vickrey mechanisms.

35. Thakur, Gogol Mitra, Ambedkar University, Delhi (18.10.2017): Petty Services, Profit-Led Growth and Rural-Urban Migration in a Developing Economy.

36. Venkatesh, Raghul S, Aix-Marseille School of Economics, France (09.03.2018): Information Transmission with Substitutability and Resource Constraints.

Economic Analysis Unit, Bangalore

1. Durga, A.R, Tamil Nadu Agricultural University, Coimbatore (13.11.2017): Water Institutions, Transaction Cost and Efficiency: The Case of Water user Associations in Kerala

2. Narayana, D., Gulati Institute of Finance and Taxation, Kerala (28.06.2017): Demonitration and Impact in GDP.

3. Pais, Jesim, Society for Social and Economic Research, New Delhi, (19.02.2018): An Overview of the Global Pulses Economy.

4. Reddy, Sajnay, New School for Social Research, New York (18.01.2018): PCM Lecture, Who gets what in the World? Insights from the Global Consumption and Income Project.

5. Singh, Shamsher, Indian Institute of Management, Ahmedabad (02.01.2018): Conceptualising Caste and Social Hierarchy: A Sociological Enquiry.

6. Singh, Shamsher, Indian Institute of Management, Ahmedabad (08.01.2018): Caste, Class and Agrarian Structure: Studies from the Field.

7. Singh, Shamsher, Indian Institute of Management, Ahmedabad (19.01.2018): Gender, Land and Agrarian Relations.

Center for Soft Computing Research, Kolkata

1. Bhattacharjee, Shrutilipi, Technical University of Munich, Germany (20.04.2017): Semantic Kriging: A Semantically Enhanced Approach for Spatial Interpolation.

Conferences and Seminars

2. Brahmachary, R.L., Bose Institute, Kolkata (03.01.2018): Intelligence in Plants, Animals and Machines.

3. Das, Sumantra, Indian Institute of Chemical Biology, Kolkata (18.08.2017): Molecular basis to therapy.

4. Frery, A.C, Universidade Federal de Alagoas, Brazil (13.02.2018): Statistical Information Theory and Geometry for SAR Image Analysis.

5. Guha, Debatosh, Institute of Radio Physics and Electronics, University of Calcutta, Kolkata (15.09.2017): A Story of Challenges and Success in Research Career of an Engineer.

6. Misra, Sudip, IIT Kharagpur, West Bengal (09.06.2017): Internet of Things: Enabling Cross-Domain Convergence and Innovation.

5. SANKHYĀ

The internationally renowned journal *Sankhyā,* an official publication of the Indian Statistical Institute, was founded by Professor P.C. Mahalanobis in 1932 and began publication under his editorship. It is devoted to original research articles in Probability, Mathematical Statistics and Applied Statistics. Reviews and discussion articles on current research activity in the above areas are also published. A rigorous peer review process is followed for acceptance of articles submitted for publication in *Sankhyā*. Many seminal articles in Probability, Theoretical Statistics and Applied Statistics have appeared in *Sankhyā.* The journal is published in two separate series – Series A and Series B. Series A with two issues per year, one in February and the other in August, covers Probability and Theoretical Statistics, while Series B with two issues per year, one in May and the other in November, covers Applied and Interdisciplinary Statistics. The present Editorial Board (till December 2018) of *Sankhyā* is as follows:

Beginning 2010, the Institute has been collaborating with Springer for printing and marketing the international edition of *Sankhyā, in both prints and electronic editions*. The editorial system is now completely electronic, that is, the entire process starting from submission of articles to editorial processing ending in final editorial decision for articles is now done online. The free access to the articles of every editions of Sankhyā is available through the Sankhyā website (sankhya.isical.ac.in).

The figures below provide the sale volume of the international subscription (in Indian Rupees) for the year 2017.

Series	Print Edition	Online Subscription	Other	Total	Royalty Received by ISI (after deduction of expenditure and TDS)
A	3,20,562.63	5,16,163.48	7,08,337.24	15,45,063.35	**10,39,761.00**
B	3,20,591.87	3,54,400.90	7,07,313.08	13,82,305.85	
A & B		26,257.89		26,257.89	

The following issues have been published during April 2017 to March 2018:

May, 2017 : Volume 79, Part I, Series B [Both Electronic and Print Editions]
August, 2017 : Volume 79, Part II, Series A [Both Electronic and Print Editions]
November, 2017 : Volume 79, Part II, Series B [Both Electronic and Print Editions]
February, 2018 : Volume 80, Part I, Series A [Both Electronic and Print Editions]

6. SCIENTIFIC PAPERS AND PUBLICATIONS

(Some Publications may have multiple entries due to collaboration across Units)

Books Published

Theoretical Statistics and Mathematics Division

Stat-Math Unit, New Delhi

1. Isha, Dewan, Deshpande, Jayant V. and Naik, NimbalkarUttara: *Nonparametric Statistics - Theory and Methods,* World Scientific, Singapore, 2017.

Applied Statistics Division

Applied and Official Statistics Unit, Tezpur

1. Hyde, M., Chungkham, H.S. and Ladusingh, L.: *Work and Health in India*, Policy Press, University of Bristol, London, United Kingdom, 280, ISBN 978-1447327363, 2017.

Computer and Communication Sciences Division

Computer Vision and Pattern Recognition Unit, Kolkata

1. Margner, V., Pal, Umapada and Antonacopoulos, A.: *Document Analysis and Text Recognition*, World Scientific, ISBN: 9789813229266, 2018.

2. Majumder, P., Mitra, M., Mehta, P. and Sankhavara, J. (eds.): *Text Processing - FIRE 2016 International Workshop,* Revised Selected Papers, Kolkata, LECTURE NOTES IN COMPUTER SCIENCE (LNCS) 10478, Springer, ISBN 978-3-319-73605-1, 2018.

3. Majumder, P., Mitra, M., Mehta, P. and Sankhavara, J. (eds.): *9th Annual Meeting of the Forum for Information Retrieval Evaluation (FIRE 2017)*, Bangalore, 2017, ACM, ISBN 978-1-4503-6382-2, 2017.

Electronics and Communication Sciences Unit, Kolkata

1. Jana, N.D., Das, S. and Sil, J.: *A Metaheuristic Approach to Protein Structure Prediction: Algorithms and Insights from Fitness Landscape Analysis*, Springer, eBook ISBN: 978-3-319-74775-0, Hardcover ISBN: 978-3-319-74774-3, Onlive Version: DOI: 10.1007/978-3-319-74775-0, 2018.

Machine Intelligence Unit, Kolkata

1. Ghosh, A., Pal, R. and Prasath, R. (eds.): *Mining Intelligence and Knowledge Exploration:*

5th International Conference (MIKE 2017), Hyderabad, Springer, 10682, 2018.

2. Thampi, S.M., Mitra, S., Mukhopadhyay, J., Li, K.–C., James, A.P. and Berretti, S. (eds.): *Intelligent Systems Technologies and Applications 2017*, Series: Advances in Intelligent Systems and Computing, Springer, 2017.

Systems Science and Informatics Unit, Kolkata

1. Majumdar, Kaushik: *A brief survey of quantitative EEG*, Taylor & Francis–CRC Press, Boca Raton, FL, USA, 2017.

2. Sagar, B.S.D., Cheng, Q. and Agterberg, F.: *Handbook of Mathematical Geosciences: Fifty Years of IAMG*, Springer, New York, ISBN 978-3-319-78998-9 (Hardback), Online Version: DOI: 10.1007/978-3-319-78999-6, 1001, 2018.

Social Sciences Division

Economic Research Unit, Kolkata

1. Chakravarty, Satya R.: *Analyzing Multidimensional Well-Being: A Quantitative Approach*, John Wiley, New Jersey, 319, 2017.

2. De, U.K., Pal, M**.** and Bharati, P.: *Issues on Health and Healthcare in India: Focus on the North Eastern Region,* (India Studies in Business and Economics) Springer Nature Singapore Pvt. Ltd., ISBN 978-981-10-6103-5, ISBN 978-981-10-6104-2 (eBook), ISSN 2198-0020 (electronic), ISSN 2198-0012, 2018.

3. De, U.K., Pal, M**.** and Bharati, P.: *Inequality, Poverty and Development in India: Focus on the North Eastern Region*, (India Studies in Business and Economics) Springer Nature Singapore Pvt. Ltd., ISBN 978-981-10-6273-5, ISBN 978-981-10-6374-2 (eBook), ISSN 2198-0020 (electronic), ISSN 2198-0012, 2017.

Linguistic Research Unit, Kolkata

1. Dasgupta, Probal, Ertl, István, Jacobsen, Jesper and Moinhos, Suso (ed.): *Beletra Almanako 28,* Mondial, New York, ISBN: 9781595693440, 2017.

2. Dasgupta, Probal, Ertl, István, Jacobsen, Jesper and Moinhos, Suso (ed.): *Beletra Almanako 29,* Mondial, New York, ISBN: 9781595693471, 2017.

3. Dasgupta, Probal, Ertl, István, Jacobsen, Jesper, Moinhos, Suso and Ruggiero, Nicola (ed.): *Beletra Almanako 30,* Mondial, New York, ISBN: 9781595693617, 2017.

4. Dash, NiladriSekhar and Arulmozi, S.: *History, Features, and Typology of Language Corpora*, Singapore, Springer Nature, ISBN: 978-981-10-7457-8 (Hardback), 322 (Hardback), Online Version: https://www.springer.com/us/book/9789811074578, 2018.

5. Kiselman, ChristerOscar, Corsetti, Renato and Dasgupta, Probal (eds.): *Aliroj al Esperanto*, Kava-Pech, Dobřichovice, Czech Republic, ISBN: 9788087169865, 2018.

Sociological Research Unit, Kolkata

1. Ghosh, BholaNath and Himansu, Ghosh (eds.): *Social Problems in India*, Concept Publishing Company, New Delhi, Pages 266+xix, ISBN:13:978-93-86682-02-4, 2017.

Economics and Planning Unit, Delhi

1. Ray, Tridip and Mishra, Ajit (eds.): *Markets, Governance, and Institutions in the Process of Economic Development*, Oxford University Press, Oxford, UK, 392, 2018.

Economic Analysis Unit, Bangalore

1. Swaminathan, Madura and Bakshi, Sandipan: *How Do Small Farmers Fare: Evidence from Village Studies in India,* Tulika Books, New Delhi, 2017.

Library, Documentation and Information Sciences Division

Library, Kolkata

1. Ganguly, Nibedita: *An Annotated Chronological History of Indian Statistical Institute1931-2006*, Library, Documentation and Information Science Division, ISBN: 978-81-927468-1-4, 2018.

Centre for Soft Computing Research, Kolkata

1. Ghosh, A., Pal, R. and Prasath, R. (eds): *Mining Intelligence and Knowledge Exploration*, 5th International Conference, Mining Intelligence and Knowledge Exploration (MIKE) 2017, Hyderabad, **Vol. 10682**, Springer, 2018.

2. UmaShankar, B., Ghosh, K., Mandal, D.P., Ray, S.S., Zhang, D. and Pal, S.K. (eds.): *Pattern Recognition and Machine Intelligence*, 7th International Conference on Pattern Recognition and Machine Intelligence (PReMI'17), Springer, LECTURE NOTES IN COMPUTER SCIENCE (LNCS), **Vol. 10597**, ISBN 978-3-319-69900-4 (ebook) ISBN 978-3-319-69899-1, 2017.

Papers Published in Journals

Theoretical Statistics and Mathematics Division

Stat-Math Unit, Kolkata

1. Biswas, Indranil and Datta, Mahuya: Non-orientable manifolds, complex and symplectic structures and characteristic classes, Bulletin of Mathematical Sciences, **141**, 2017.

2. Basak, G K., Ghosh, M.K. and Mukherjee, D.A: Stochastic Model with Inflation, Growth and Technology for the Political Business Cycle, *Computational Economics*, Online Version: https://doi.org/10.1007/s10614-017-9729-x, 2017.

3. Basak, Gopal, K., Das, Pranab, Kumar and Rohit, Allena: Capital inflow-terms of trade 'nexus': Does it lead to financial crisis? *Economic Modelling*, **65**, 18-29, 2017.

4. Bandyopadhyay, Pradipta, Dutta, S. and Sensarma, A.: Almost Isometric Ideals and Non-Separable Gurariy Spaces, Journal of Mathematical Analysis and Applications, **462**, 279–284, 2018.

5. Dutta, Amartya Kumar: Weighted Arithmetic Mean in Ancient India, *Bhavana*, **1(4)**, 24-36, 2017.

6. Dasgupta, Amites and Datta, Mahuya: Nash twist and Gaussian noise measure for isometric C1 maps, *Communications on Stochastic Analysis,* **11**, 2017.

7. Das, Mrinal K., Tikader, Soumi, Zinna, and Md. Ali: Orbit spaces of unimodular rows over smooth real affine algebras, *Inventiones Mathematicae*, **212**, 133-159, 2018.

8. Goswami, Debashish and Joardar, Soumalya: Non-existence of faithful isometric action of compact quantum groups on compact, connected Riemannian manifolds, Geometric And Functional Analysis, **28 (1)**, 146-178, 2018.

9. Gupta, Neena: Some problems on polynomial rings, Mathematics Student, **86(3-4)**, 7-19, 2017.

Stat-Math Unit, Delhi

1. Bapat, Ravindra B. and Roy, Souvik: Cayley-Hamilton for mixed discriminants, *Journal of Combinatorial Mathematics and Combinatorial Computing*, **101**, 223-231, 2017.

2. Bapat, Ravindra B., Jain, Surendra Kumar, Karantha, Manjunatha Prasad and Raj, M. David: Outer inverses: Characterization and applications, *Linear Algebra and Its Applications*, **528**, 171-184, 2017.

3. Bapat, R.B. and Karimi, Masoud: Construction of cospectral integral regular graphs, *Discussionae Mathematicae Graph Theory,* **37(3)**, 595-609, 2017.

4. Bapat. R.B., Panda, S.K. and Pati, S.: Self-inverse unicyclic graphs and strong reciprocal eigenvalue property, *Linear Algebra and Its Applications*, **531**, 459-478, 2017.

5. Bapat, R.B., Kalita, D., Nath, M. and Sarma, D.: Convex and quasiconvex functions on trees and their applications, *Linear Algebra and Its Applications*, **533**, 210-234, 2017.

6. Bapat, Ravindra B., Karimi, Masoud and Liu, Jia-Bao: Kirchhoff index and degree Kirchhoff index of complete multipartite graphs, *Discrete Applied Mathematics*, **232**, 41-49, 2017.

7. Bapat, Ravindra B., Karantha, ManjunathaPrasad, Nandini, Nupur and Shenoy, Divya P.: Outer inverses and Jacobi type identities, *Linear Algebra and Its Applications*, **536**, 274-294, 2018.

8. Bapat, Ravindra B., Fujita, Shinya, Legay, Sylvain, Manoussakis, Yannis, Matsui, Yasuko, Sakuma, Tadashi and Tuza, Zsolt: Safe sets, network majority on weighted trees, *Networks,* **71(1)**, 81–92, 2018.

9. Bapat, Ravindra B. and Karimi, Masoud: Integral complete multipartite graphs, *Linear Algebra and Its Applications*, **549**, 1-11, 2018.

Publications

10. Chatterjee, Arindam: High-dimensional simultaneous inference with the bootstrap, TEST, **26 (4)**, 729-730, 2017.

11. Dewan, Isha, Sreedevi E.P. and Sankaran, P.G.: A martingale based test for independence of time to failure and cause of failure for competing risks models, *Communications of Statistics -Theory and Methods*, **46**, 8178-8186, 2017.

12. Dewan, Isha and Garg, Mansi: On limiting distribution of U-statistics based on associated random variables, *Statistics and Probability Letters*, 7-16, 2018**.**

13. Dewan, Isha and Garg, Mansi: On estimation of limiting variance of partial sums of functions of associated random variables, *Journal of Statistical Planning and Inference*, 1-17, 2018.

14. Jain Tanvi: Hadamard powers of some positive matrices, *Linear Algebra and its Applications*, 528, 147-158, 2017.

15. Laishram, Shanta, Das, P. and Saradha, N.: \emph{Variations of Erd\H{o}s-Selfridge superelliptic curves and their rational points}, *Mathematika*, **64**, 380-386, 2018.

16. Laishram, Shanta, Jindal, A. and Sarma, R.: \emph{Irreducibility and Galois Groups of Generalized Laguerre Polynomials $L_{n}^{(-1-n-r)}(x)$}, Journal of Number Theory, **183**, 388-406, 2018.

17. Roy. Rahul and Tanemura, Hideki: Percolation clusters as generators of orientation ordering, *Journal of Statistical physics,* **168**, 1259-1275, 2017.

18. Singh, Ranveer and Bapat, Ravindra. B.: On characteristic and permanent polynomials of a matrix, *Special Matrices*, **5**, 97-112, 2017.

Stat-Math Unit, Bangalore

1. Athreya, K.B. and Rajeev, B.: Weak convergence of the past and future of Brownian motion given the present, Proceedings of the Indian Academy of Sciences – Mathematical Sciences, **127(1)**, 165–174, 2017.

2. Athreya, Siva, Löhr, Wolfgang and Winter, Anita: Invariance principle for variable speed random walks on trees, Annals of Probability*,* **45(2)**, 625–667, 2017.

3. Bagchi, Bhaskar, Datta, Basudeb and Spreer, Jonathan: A characterization of tightly triangulated 3-manifolds, European Journal of Combinatorics*,* **61**, 133-137, 2017.

4. Bhattacharya, Ayan, Hazra, RajatSubhra and Roy, Parthanil: Branching random walks, stable point processes and regular variation, *Stochastic Process. Appl.*, **128(1),** 182-210, 2018.

5. Bhat, B.V. Rajarama, Mallick, Nirupama and Sumesh, K.: Regular representations of completely bounded maps, *Pacific J. Math.*, **289(2),** 257-286, 2017.

6. Chattopadhyay, A., Das, B.K. and Sarkar, Jaydeb: Rank of a co-doubly commuting submodule is 2, *American Math Society*, **146,** 1181-1187, 2018.

7. Das, B.K., Sarkar, S. and Sarkar, Jaydeb: Factorizations of Contractions, *Advances in Mathematics*, **322**, 186-200, 2017.

8. Foias, C., Pearcy, C. and Sarkar, Jaydeb: Contractions with Polynomial Characteristic Functions II Analytic Approach, *Journal of Operator Theory*, **78**, 281-291, 2017.

9. Glöckner, Helg and Raja, C.R.E.: Expansive automorphisms of totally disconnected, locally compact groups, *J. Group Theory*, **20(3),** 589–619, 2017.

10. Joseph, Mathew, Khoshnevisan, Davar and Mueller, Carl: Strong invariance and noise-comparison principles for some parabolic stochastic PDEs., *Ann. Probab.*, **45(1),** 377–403, 2017.

11. Kumar, Manish: Embedding problems for open subgroups of the fundamental group, *Ann. Inst. Fourier (Grenoble)*, **67(6),** 2623–2649, 2017.

12. Nair, S.G. and Shorey, T.N.: Generalized Lagurre polynomials with applications, *Math. Student*, **86**, 87–101, 2017.

13. Nair, S.G. and Shorey, T.N.: Fibonacci sequence with applications and extensions, *Math. Student*, **86**, 55–62, 2017.

14. Nair, S.G. and Shorey, T.N.: On products from blocks of consecutive odd integers, *Publ. Math. Debrecen,* **92**, 1-15, 2018.

15. Rajarama Bhat, B.V., Lindsay, J. Martin and Mukherjee, Mithun: Additive units of product systems, *Trans. Amer. Math. Soc*.**, 370(4),** 2605–2637, 2018.

16. RajaramaBhat, B.V., Parthasarathy, K.R. and Sengupta, Ritabrata: On the equivalence of separability and extendability of quantum states, *Rev. Math. Phys.*, **29(4),** 16, 2017.

17. Rao, T.S.S.R.K.: A Cheney and Wulbert type lifting theorem in optimization, *Boll. Unione Mat. Ital,* **10(4)***,* 585–589, 2017.

18. Rao, T.S.S.R.K.: Coproximinality in spaces of Bochner integrable functions, *J. Convex Anal.,* **24(3)***,* 955–958, 2017.

19. Rao, T.S.S.R K.: On a theorem of Abatzoglou for operators on abstract L and M-spaces, *J. Math. Anal. Appl.* **453(2)***,* 1000–1004, 2017.

20. Rao, T.S.S.R.K.: Into isometries that preserve finite dimensional structure of the range, *Problems and recent methods in operator theory*, Contemporary Mathematics- American Mathematical Society, Providence, Rhode Island*,* USA, **687**, 219–224, 2017.

21. Reddy, NandaKishore: Equality of Lyapunov and Stability Exponents for Products of Isotropic Random Matrices, *International Mathematics Research Notices*, Online Version: DOI: https://doi.org/10.1093/imrn/rnx134, 2017.

22. Reddy, TulasiRam, Vadlamani, Sreekar and Yogeshwaran, D.: Central limit theorem for exponentially quasi-local statistics of spin models on Cayley graphs, *Journal of Statistical Physics,* Online Version: DOI: 10.1007/s10955-018-2026-9, 2018.

23. Sarkar, Jaydeb, Trivedi, H. and Veerabathiran, H.: Covariant representations of subproduct systems: Invariant subspaces and curvature, *New York Journal of Mathematics,* **24**, 211-232, 2018.

24. Sury, B.: Fifteen, two hundred and ninety and Bhargava, *Math. Newsl.* **27(3),** 183–187, 2017.

Applied Statistics Division

Applied Statistics Unit, Kolkata

1. Atkinson, Anthony C. and Biswas, Atanu: Optimal response and covariate-adaptive biased-coin designs for clinical trials with continuous multivariate or longitudinal responses, *Computational Statistics and Data Analysis*, **113**, 297-310, ISSN 0167-9473, 2017.

2. Angers, J.F., Biswas, A. and Maiti, R.: Bayesian forecasting for time series of categorical data, *Journal of Forecasting,* **36**, 217–229, 2017.

3. Basak, Papri, Maitra-Majee, Susmita, Das, JayantaKumar, Begum, Tina, Ghosh, Dastidar, Shubhra, Pal Choudhury, Pabitra and Majumder, ArunLahiri: An evolutionary conserved pentapeptide stretch contains the two essential Lysine residues for L-myo-inositol 1-phosphate synthase catalytic activity, *PLoS ONE,* **12(9**), Online Version: DOI: org/10.1371/journal.pone.0185351, 2017.

4. Bhuyan, P. and Dewanji, A.: Estimation of system reliability for dynamic stress-strength modeling with cumulative stress and strength degradation, *Statistics*, **51**, 766-781, 2017.

5. Bhuyan, P. and Sengupta, D: Estimation of Reliability with Semi-parametric Modelling of Degradation, *Computational Statistics and Data Analysis*, **115**, 172-185, 2017.

6. Bhuyan, P., Mitra, M and Dewanji, A.: Identifiability issues in dynamic stress-strength modelling, *Annals of the Institute of Statistical Mathematics*, **70**, 63-81, 2018.

7. Biswas, A., Bhattacharya, R. and Mukherjee, T.: An adaptive allocation design for circular treatment outcome, *Journal of Statistical Theory and PracticeVolume*, **11**(4), 719-730, 2017.

8. Budhiraja, S., Pradhan, B. and Sengupta, D.: Maximum likelihood estimators under progressive Type-I interval censoring, *Statistics and Probability Letters*, **123**, 202-209, 2017.

9. Chakrabarti, Arijit and Ghosh, Prasenjit: Asymptotic optimality of one-group shrinkage priors in sparse high-dimensional problems, *Bayesian Analysis*, **12(4),** 1133-1161, 2017.

10. Das, JayantaKumar, Pal Choudhury, Pabitra, Chaturvedi, Neelambuj, Tayyab, Mohd and Hassan, Sk.Sarif: Ranking and clustering of Drosophila olfactory receptors using mathematical morphology, *Genomics*, ISSN: 0888-7543, Online Version: https: //doi.org/10.1016/j.ygeno.2018.03.010., 2018.

11. Ghosh, P. and Dewanji, A.: Sample size of the reference sample in a case-augmented study, *Pharmacoepidemiology and Drug Safety*, **26**, 528-534, 2017.

12. Hore, S., Chatterjee, A and Dewanji, A: Improving variable neighbourhood search to solve the traveling salesman problem, *Applied Soft Computing*, **68**, 83-91, 2018.

13. Khoo, W.C., Ong, S.H. and Biswas, A.: Modelling time series of counts with a new class of INAR (1) models*, Statistical Papers*, **58**, 393, 2017.

14. Komaki, F. and Biswas, A.: Bayesian optimal response-adaptive design for binary responses using stopping rule, *Statistical Methods in Medical Research*, **27(3)**, 891-904, Online Version: DOI: 10.1177/0962280216647210, 2018.

15. Maiti, R. and Biswas, A.: Time series analysis of categorical data using auto-odds ratio function, *Statistics*, 2017, Online Version: https://doi.org/10.1080/02331888.2017.1421196, 2018.

16. Sahoo, S. and Sengupta, D.: Testing the hypothesis of increasing hazard ratio in two samples, *Computational Statistics and Data Analysis*, **114**, 119-129, 2017.

17. Samajder, Sudhabrata and Sarkar, Palash: Multiple (truncated) Differential Cryptanalysis Explicit Upper Bounds on Data Complexity Cryptography and Communications-Discrete Structures*, Boolean Functions and Sequences*, Online Version: DOI: https://doi.org/10.1007/s12095-017-0268-z, 2018.

18. Samajder, Sudhabrata and Sarkar, Palash: Success Probability of Multiple/ Multidimensional Linear Cryptanalysis under General Key Randomisation Hypotheses Cryptography and Communications-Discrete Structures*, Boolean Functions and Sequences*, Online Version: https://doi.org/10.1007/s12095-017-0257-2, 2018.

Interdisciplinary Statistical Research Unit, Kolkata

1. Arun Kumar, K. and Basu, A.: On the aysmptotics of minimum disparity estimation, *TEST*, **26**, 481-502, 2017.

2. Basu, P., Cai, T.T., Das, K. and Sun, W.: Weighted False Discovery Rate Control in Large Scale multiple Testing, *Journal of the American Statistical Association*, Online Version: DOI: 10.1080/01621459.2017.1336443, 2017.

3. Bhattacharya, D. and Bhattacharya, S.: A Bayesian Semiparametric Approach to Learning About Gene-Gene Interactions in Case-Control Studies, *Journal of Applied Statistics*, Online Version: DOI: 10.1080/02664763.2018.144474, 2018.

4. Bhuyan, P, Biswas, J., Ghosh, P. and Das, K.: A Bayesian two-stage regression approach of analyzing longitudinal outcomes with endogeneity and incompleteness, *Statistical Modelling,* Online Version: DOI: 10.1177/1471082X1774780, 2018.

5. Chatterjee, D. and Bhattacharya, S.: A Statistical Perspective of Inverse and Inverse Regression Problems, *RASHI*, **2**, 67–82, 2017.

6. Chatterjee, D., Maitra, T. and Bhattacharya, S.: A Short Note on Almost Sure Convergence of Bayes Factors in the General Set-Up, *The American Statistician*, Online Version: DOI: 10.1080/00031305.2017.1347548, 2018.

7. Dey, K.K. and Bhattacharya, S.: A Brief Tutorial on Transformation Based Markov Chain Monte Carlo and Optimal Scaling of the Additive Transformation, *Brazilian Journal of Probability and Statistics*, **31**, 569-617, 2017.

8. Ghosh, A, and Thoresen, M.: Non-Concave Penalization in Linear Mixed-Effect Models and Regularized Selection of Fixed Effects, *ASIA Advances in Statistical Analysis*, **102(2**), 179-210, 2018.

9. Ghosh, A. and Basu, A.: The minimum S-divergence estimation under continuous models: The Basu-Lindsay approach, *Statistical Papers*, **58**, 341-372, 2017.

10. Ghosh, A. and Basu, A.: A New Family of Divergences Originating from Model Adequacy Tests and Application to Robust Statistical Inference, *IEEE Transactions on Information Theory*, Online Version: DOI: 10.1109/TIT.2018.2794537, 2018.

11. Ghosh, A. and Basu, A.: Improvements in the Small Sample Efficiency of the Minimum S-Divergence Estimators under Discrete Models, *Journal of Statistical Computation and Simulation*, **88(3),** 511-532, 2018.

12. Ghosh, A.: Robust Inference under the Beta Regression Model with Application to Health Care Studies, *Statistical Methods in Medical Research*, Online Version: DOI: 10.1177/0962280217738142, 2017.

13. Gupta, S, Mukherjee, A., Biswas, A., Bose, S., Nath, S. and Das, H. N.: Evaluation of Endocrine Parameters as Predictor of Major Depressive Disorder, *Indian Journal of Psychological Medicine,* **39(6),** 766-769, 2017.

14. Mazumder, S. and Bhattacharya, S.: Nonparametric Dynamic State Space Modeling of Observed Circular Time Series with Circular Latent States: A Bayesian Perspective, *Journal of Statistical Theory and Practice*, **11**, 693—718, 2017.

15. SahaRay, Rita and Dutta, Ganesh: On the optimality of blocked main effects plans with even number of runs, *Journal of Statistical theory and Practice,* **12(1),** 136-150, 2018.

16. Uddin, M, Biswas, D, Ghosh, A., O'Kennedy, N and Duttaroy, A.K: Consumption of Fruitflow lowers blood pressure in pre-hypertensive males: A randomized, placebo controlled, double blind, cross-over study, *International Journal of Food Sciences and Nutrition*, **69(4)**, 494-502, 2018.

Applied and Official Statistics Unit, Tezpur

1. Chowdhury, K.B., Kundu, S. and Sarkar, N.: Regime-dependent effects of uncertainty on inflation and output growth: evidence from the United Kingdom and the United States, *Scottish Journal of Political Economy*, **5(4),** 390-413, Online Version: https://doi.org/10.1111/sjpe.12168, 2018.

2. Hanson, LL, Peristera, P, Chungkham, HS and Westerlund, H.: Psychosocial work characteristics, sleep disturbances and risk of subsequent depressive symptoms: a study of time varying effect modification, *Journal of Sleep Research*, **26 (3)**, 266-276, 2017.

3. Singha, Harshajit and Athe, Ramesh: Youngstar's purchasing patterns/behaviors of University students-A qualitative analysis, *International Journal of Advanced Research*, **5(7)**, 360-367, Online Version: http://dx.doi.org/10.21474/IJAR01/4727, 2017.

Computer and Communication Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata

1. Banik, A., Bhattacharya, B.B., Das, S. and Mukherjee, S.: The discrete Voronoi game in R^2, *Computational Geometry*, **63**, 53-62, 2017.

2. Banerjee, S., Bhattacharya, B.B., Biswas, A., Das, S., Mandal, R., and Roy, S.: On

Representing a Simple Polygon Perceivable to a Blind Person, *Information Processing Letters*, **120**,1-5, 2017.

3. Bhattacharya, B.K., De, M., Maheshwari, A., Nandy, S.C. and Roy, S.: Rectilinear Path Problems in Restricted Memory Setup, *Discrete Applied Mathematics*, **228**, 80-87, 2017.

4. Bishnu, A., Ghosh, A. and Paul, S.: Linear kernels for k-tuple and liar's domination in bounded genus graphs, *Discrete Applied Mathematics*, **231**, 67-77, 2017.

5. Bishnu, A., Desai, S., Ghosh, A., Goswami, M. and Paul, S.: Uniformity of Point Samples in Metric Spaces Using Gap Ratio**,** *SIAM J. Discrete Math.*, **31(3)**, 2138-2171, 2017.

6. Chattopadhyay, S., Banerjee, A. and Banerjee, N.: A Fast and Scalable Mechanism for Web Service Composition, *ACM Transactions on Web*, **26**, 1-36, 2017.

7. Chatterjee, P., Ghosh, S.C. and Das, N.: Load Balanced Coverage with Graded Node Deployment in Wireless Sensor Networks, *IEEE Transactions on Multi-Scale Computing Systems*, **3(2)**, 100- 112, 2017.

8. Das, S., Ghosh, S.C. and Nandi, S.: Optimal L(3,2,1)-labeling of triangular lattice, *Discrete Applied Mathematics*, **228**, 32-40, 2017.

9. Maheshwari, A., Pattanaik, D., Nandy, S.C., Roy, S. and Smid, M.H.M.: Geometric Path Problems with Violations, *Algorithmica*, **80(2)**, 448-471, 2018.

10. Nandi, B.B., Ghosh, S.C., Banerjee, A. and Banerjee, N.: Customer on-boarding strategies for cloud computing services with dynamic service level agreements, *Springer journal on Service Oriented Computing And Applications (SOCA)*, **11(1),** 47-63, 2017.

11. Nandy, S.C., Pandit, S. and Roy, S.: Faster Approximation for Maximum Independent Set on Unit Disk Graph, *Information Processing Letters*, **127**, 58-61, 2017.

12. Nia, A.M., Sur-Kolay, S., Raghunathan, A. and Jha, N.K.: Wearable Medical Sensor-based System Design: A Survey, *IEEE Transactions on Multi-Scale Computing Systems*, **3(2)**, 124-138, ONLINE VERSION: DOI: 10.1109/TMSCS.2017.2675888, 2017.

13. Nia, A.M., Sur-Kolay, S., Raghunathan, A. and Jha, N.K.: DISASTER: Dedicated Intelligent Security Attacks on Sensor-triggered Emergency Responses, *IEEE Transactions on Multi-Scale Computing Systems*, **3(4)**, 255-268, Online Version: DOI: 10.1109/TMSCS.2017.2720660, 2017.

14. Nia, A.M., Sur-Kolay, S., Raghunathan, A. and Jha, N.K.: CABA: Continuous Authentication Based on BioAura, *IEEE Transactions on Computers*, **66(5)**, 759-772, 2017.

15. Nongpoh, B., Ray, R., Dutta, S. and Banerjee, A.: AutoSense: A Framework for Automated Sensitivity Analysis of Program Data, *IEEE Transactions on Software Engineering (TSE)*, **43(12)**, 1110-1124, 2017.

16. Panigrahy, N.K. and Ghosh, S.C.: Analyzing the effect of soft handover on handover evaluation metrics under load condition, *IEEE Transactions on Vehicular Technology*, **67(4)**, 3612-3624, 2018.

17. Saha, D., Pal, S., Das, N. and Bhattacharya, B.B.: Fast Estimation of Area-Coverage for Wireless Sensor Networks Based on Digital Geometry, *IEEE Transactions on Multi-Scale Computing*

Systems, **3(3)**, 166-180, 2017.

18. Tewari, B.P. and Ghosh S.C.: Joint frequency assignment and association control to maximize the aggregate throughput in IEEE 802.11 WLAN, *Springer Journal on Wireless Personal Communications*, **94(3)**, 1193-1221, 2017.

Computer Vision and Pattern Recognition Unit, Kolkata

1. Bhattacharya, Ujjwal, Plamondon, Réjean, Chowdhury, Souvik Dutta , Goyal, Pankaj and Parui, Swapan K.: A sigma-lognormal model-based approach to generating large synthetic online handwriting sample databases, *International Journal on Document Analysis and Recognition*, **20(3)**, 155-171, 2017.

2. Chakraborti, Tapabrata, McCane, Brendan, Mills, Steven and Pal, Umapada: LOOP Descriptor: Local Optimal Oriented Pattern, *IEEE Signal Process. Letters,* **25(5)**, 635-639. 2018.

3. Dutta, Anjan, Llados, Josep, Bunkeb, Horst and Pal, Umapada: Product Graph-based Higher Order Contextual Similarities for Inexact Subgraph Matching, *Pattern Recognition*, **76**, 596-611, 2018.

4. Kumar, Pradeep, Saini, Rajkumar, Roy, Partha P and Pal, Umapada: A Lexicon-free Approach for 3D Handwriting Recognition using Classifier Combination, *Pattern Recognition Letters*, **103**, 1-7, 2018.

5. Mondal, Tanmoy, Ragot, Nicolas, Ramel, Jean-Yves and Pal, Umapada: Comparative Study of Conventional Time Series Matching Techniques for Word Spotting, *Pattern Recognition*, **73**, 47-64, 2018.

6. Pal, Anabik, Garain, Utpal, Chandra, Aditi, Chatterjee, Raghunath and Senapati, Swapan: Psoriasis skin biopsy image segmentation using Deep Convolutional Neural Network, *Computer Methods and Programs in Biomedicine*, **159**, 59-69, 2018.

7. Sain, A., Bhunia, A.K., Roy, Partha. P. and Pal, Umapada: Multi-Oriented Text Detection and Verification in Video Frames and Scene Images, *Neurocomputing*, **275**, 1531-1549, 2018.

8. Samanta, Oendrila, Roy, Anandarup, Parui, Swapan K. and Bhattacharya, Ujjwal: An HMM framework based on spherical-linear features for online cursive handwriting recognition, *Information Sciences*, **441**,133-151, 2018.

Electronics and Communication Sciences Unit, Kolkata

1. Agarwal, S., Santra, B. and Mukherjee, D.P.: Anubhav: Recognizing Emotions through Facial Expressions, *The Visual Computer*, **34(2)**, 177-191, 2018.

2. Akhtar, Y. and Mukherjee, D.P.: Reconstruction of Three Dimensional Linear Structures in the Breast from Cranio-Caudal and Medio-Lateral-Oblique Mammographic Views, *IET Image Processing*, **11(11)**, 1114-1121, 2017.

3. Agarwal, S. and Mukherjee, D. P.: Facial Expression Recognition through Adaptive Learning of Local Motion Descriptor, *Multimedia Tools and Applications, Springer*, **76(1)**, 1073-1099, 2017.

4. Biswas, N., Chakraborty, S., Mullick, S.S. and Das, S.: A parameter independent fuzzy weighted k-nearest neighbor classifier, *Pattern Recognition Letters*, **101**, 80-87, 2018.

5. Chatterjee, K. and Ray, K. S.: Non-regular unary language and parallel communicating Watson–Crick automata systems, *Theoretical Computer Science*, **705(5)**, 113-117, 2018.

6. Chakraborty, S. and Das, S.: Simultaneous variable weighting and determining the number of clusters - A weighted Gaussian means algorithm, *Statistics and Probability Letters* (Impact Factor 0.54), Online Version: DOI: https://doi.org/10.1016/j.spl.2018.01.015, 2018.

7. Chatterjee, K. and Ray, K.S.: Watson-Crick pushdown automata, *Kybernetika*, **5(5)**, 868–876, 2017.

8. Chakraborty, S. and Das, S.: k-Means clustering with a new divergence-based distance metric: convergence and performance analysis, *Pattern Recognition Letters* (Impact Factor 1.995), **100**, 67-73, 2017.

9. Das, S., Datta, S. and Chaudhuri, B.B.: Handling data irregularities in classification: foundations, trends, and future challenges, *Pattern Recognition*, Elsevier, Online Version: DOI: https://doi.org/10.1016/ j.patcog.2018.03.008, 2018.

10. Datta, S., Mullick, S. S. and Das, S.: Generalized mean based back-propagation of errors for ambiguity resolution, *Pattern Recognition Letters* (Impact Factor: 1.586), **94**, 22-29, 2017.

11. DasGupta, J, Samanta S. and Chanda, B.: An Ensemble Classifier based Off-line Handwritten Word Recognition System in Holistic Approach, *IET Image Processing*, Online Version: DOI: 10.1049/iet-ipr.2017.0745, Online ISSN: 1751-9667, 2018.

12. Ghorai, M., Mandal, S. and Chanda, B.: A Group-based Image Inpainting using Patch Refinement in MRF Framework, *IEEE Transactions on Image Processing*, **27(2)**, 556-567, 2018.

13. Ghosh, A., Das, S., Mallipeddi, R., Das, A.K. and Dash, S.S.: A modified differential evolution with distance-based selection for continuous optimization in presence of noise, *IEEE Access*, **5**, 26944-26964, 2017.

14. Jana, N.D., Sil, J. and Das, S.: Continuous fitness landscape analysis using a chaos-based random walk algorithm, *Soft Computing*, **22(3)**, 921-948, 2018.

15. Jana, N.D., Sil, J. and Das, S.: Selection of appropriate metaheuristic algorithms for protein structure prediction in AB off-lattice model: a perspective from fitness landscape analysis, *Information Sciences*, **391**, 28-64, 2017.

16. Karmakar, B. and Pal, N.R.: How to make a neural network say Don't know, *Information Sciences*, 430-431, 2018.

17. Lin, C-T, Hsieh, T-Y, Liu, Y-T, Lin, Y-Y, Fang, C-N, Wang, Y-K, Yen, G., Pal, N. R. and C-H Chuang, C-H: Minority Oversampling in Kernel Adaptive Subspaces for Class Imbalanced Datasets, *IEEE Trans.on Knowledge and Data Engineering*, Online Version: DOI: 10.1109/TKDE.2017, **2779849**, 2017.

18. Liu, Yu-Ting, Pal, N.R., Marathe, A.R., Wang, Y-K and Lin, C-T: Fuzzy Decision-Making Fuser (FDMF) for Integrating Human-Machine Autonomous (HMA) Systems with

Adaptive Evidence Sources, *Frontiers in neuroscience*, **11(332)**, Online Version: DOI: https://doi.org/ 10.3389/ fnins.2017.00332, 2017.

19. Mullick, S. S., Datta, S. and Das, S.: Adaptive learning based k-nearest neighbor classifiers with resilience to class imbalance, *IEEE Transactions on Neural Networks and Learning Systems* (Impact Factor 6.108), Online Version: DOI: 10.1109/TNNLS.2018.2812279, 2018.

20. Mondal, M. and Ray, K.S.: Syllogistic Reasoning by strand algebra, *International Journal of Bio-inspired Computation*, **1(1)**, 56-66, 2017.

21. Ochoa, G., Lizasoain, Paternain, I. D, Bustince, H. and Pal, N. R.: From quantitative to qualitative orness for Lattice OWA operators, *International Journal of General Systems*, Online Version: DOI:10.1080/03081079.2017.1319364, **46(6)**, 640-669, 2017.

22. Paul, A., Mukherjee, D.P. and Acton, S.: Speckle Removal Using Diffusion Potential for Optical Coherence Tomography Images, *IEEE Journal of Biomedical and Health Informatics*, Online Version: DOI: 10.1109/JBHI.2018.2791624, 2017.

23. Panja, R. and Pal, N. R.: MS-SVM: Minimally Spanned Support Vector Machine, *Applied soft Computing*, Online Version: DOI: 10.1016/j.asoc.2017.12.017, **64**, 356-365, 2018.

24. Roy, S. K., Kumar, S., Chanda, B, Chaudhuri, B. B. and Banerjee, S.: Fractal Image Compression using Upper Bound on Scaling Parameter, *Journal of Chaos, Solitons Fractals*, **106**, 16 -22, 2018.

25. Ray, K. S., Paul, S., and Saha, D.: Preorder-based triangle: A modified version of bilattice-based triangle for belief revision in nonmonotonic reasoning, *Journal of Experimental Theoretical Artificial Intelligence*, Online Version: DOI: 10.1080/0952813X.2018.1467493, 2018.

26. Roy, S. K., Chanda, B, Chaudhuri, B. B, Banerjee, S and Dubey, S. R.: Local Directional ZigZag Pattern: A Rotation Invariant Descriptor for Texture Classification, *Pattern Recognition Letters*, **108**, 23-30, 2018.

27. Saha, A. and Das, S.: Feature weighted clustering with inner product induced norm based dissimilarity measures: an optimization perspective, *Machine Learning* (Impact Factor 1.719), *Springer*, **106(7)**, 951-992, 2017.

28. Saha, A. and Das, S.: Clustering of fuzzy data and simultaneous feature selection: A model selection approach, *Fuzzy Sets and Systems,* **340**, 1-37, 2018.

29. Saha, A. and Das, S.: On the unification of possibilistic fuzzy clustering: Axiomatic development and convergence analysis, *Fuzzy Sets and Systems*, **340**, 73-90, 2018.

30. Saha, A. and Das, S.: Axiomatic generalization of the membership degree based weighting function for Fuzzy C Means clustering: theoretical development and convergence analysis, *Information Sciences* (Impact Factor: 4.832), **408**, 129-145, 2017.

Machine Intelligence Unit, Kolkata

1. Bandyopadhyay, S and Mallick, K.: A new feature vector based on Gene Ontology terms for protein-protein interaction prediction, *IEEE/ACM Transactions on Computational Biology and Bioinformatics,* **14(4**), 762-770, Online Version: DOI: 10.1109/TCBB.2016.2555304, 2017.

2. Bakshi, A. and Ghosh, K.: A parsimonious model of brightness induction, *Biological Cybernetics*, Online Version: DOI: https://doi.org/10.1007/s00422-018-0747-0, 2018.

3. Bakshi, A., Roy, S., Mallick, A. and Ghosh, K.: Experimental Observations of the Visibility Threshold of Illusory effects inHermann Grid, Sinusoidal and Square Gratings and their Possible Implications, *International Journal of Open Access Ophthalmology,* **2(1),** 1-8, Online Version: DOI: 10.15226/2474-9249/2/1/00120, 2017.

4. Banerjee, S., Mitra, S. and Uma Shankar, B.: Automated 3D segmentation of brain tumor using visual saliency, *Information Sciences*, **424**, 337-353, 2018.

5. Banerjee, A. and Maji, P.: Spatially Constrained Student's t-Distribution Based Mixture Model for Robust Image Segmentation, *Journal of Mathematical Imaging and Vision*, Springer**, 60(3**), 355-381, 2018.

6. Banerjee, A. and Maji, P.: Stomped-t: A Novel Probability Distribution for Rough-Probabilistic Clustering*, Information Sciences*, **421**, 104-125, 2017.

7. Bhadra, T., Mallik, S. and Bandyopadhyay, S.: Identification of Multi-View Gene Modules using Mutual Information Based Hypograph Mining, *IEEE Transactions on Systems, Man and Cybernetics: Systems*, Online Version: DOI: 10.1109/TSMC.2017.2726553, 2017.

8. Bhattacharyya, M., Maity, S. and Bandyopadhyay, S.: Exploring the Missing Links between Dietary Habits and Diseases, *IEEE Transactions on NanoBioscience,* **16(3**), 226-238, Online Version: DOI: 10.1109/TNB.2017.2654121, 2017.

9. Chatterjee, P. Roy, D., Bhattacharyya, M. and Bandyopadhyay, S.: Biological Networks in Parkinson's Disease: An Insight into the Epigenetic Mechanisms Associated with this Disease, *BMC Genomics*, **18(721)**, Online Version: DOI: 10.1186/s12864-017-4098-3, 2017.

10. Ghosh, D. and De, R.K.: In silico modeling of Crabtree effect, *Endocrine Metabolic & Immune Disorders - Drug Targets*, **17**, 182-188, 2017.

11. Ghosh, D. and De, R.K.: Slow update stochastic simulation algorithms for modeling complex biochemical networks, *BioSystems*, **162**, 135-146, 2017.

12. Joardar, S., Chatterjee, A., Bandyopadhyay, S. and Maulik, U.: Multi-size Patch based Collaborative Representation for Palm Dorsa Vein Pattern Recognition by Enhanced Ensemble Learning with Modified Interactive Artificial Bee Colony Algorithm, *Engineering Applications of Artificial Intelligence,* Elsevier, **60**, 151-163, Online Version: DOI: 10.1016/j.engappai.2017.02.002, 2017.

13. Kundu, P.P. and Mitra, S.: Feature selection through message passing, *IEEE Transactions on Cybernetics,* **47**, 4356-4366, 2017.

14. Maji, P. and Shah, E.: Significance and Functional Similarity for Identification of Disease Genes, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, **14(6),** 1419-1433, 2017.

15. Maji, P. and Mandal, A.: Multimodal Omics Data Integration Using Max Relevance-Max Significance Criterion, *IEEE Transactions on Biomedical Engineering*, **64(8**), 1841-1851, 2017.

16. Maji, P., Shah, E. and Paul, S.: RelSim: An Integrated Method to Identify Disease Genes Using Gene Expression Profiles and PPIN Based Similarity Measure*, Information Sciences*, **384**, 110-125, 2017.

17. Mallik S. and Bandyopadhyay, S.: Integrating Multiple Data Sources for Combinatorial Marker Discovery: A Study in Tumorigenesis, *IEEE Transactions on Computational Biology and Bioinformatics*, **15(2),** 673-687, Online Version: DOI: 10.1109/TCBB.2016.2636207, 2018.

18. Murthy, K.R. and Ghosh, A.: Norm Discriminant Eigenspace Transform for Pattern Classification, *IEEE Transactions on Cybernetics,* Online Version: DOI: 10.1109/TCYB.2017. 2771530, 2017.

19. Nayak, L. and De, R.K. De: Precision oncology with Electronic Medical Records, *European Medical Journal*, **2(1)**, 64-72, 2018.

20. Pal, M., Saha, S. and Bandyopadhyay, S.: DECOR: Differential Evolution using Clustering based Objective Reduction for Many-Objective Optimization, *Information Sciences*, **423,** 200-218, Online Version: DOI: 10.1016/j.ins.2017.09.051, 2018.

21. Roy, S. and Maji, P.: Rough-Fuzzy Segmentation of HEp-2 Cell Indirect Immunofluorescence Images, *International Journal of Data Mining and Bioinformatics*, **17(4)**, 311-340, 2017.

22. Sardar, M., Mitra, S., and Uma Shankar, B.: Iris localization using rough entropy: A soft computing approach, *Applied Soft Computing,* **67**, 61-69, 2018.

23. Sen, S., Maulik, U., Mallik, S. and Bandyopadhyay, S.: Detecting TF-MiRNA-Gene Network Based Modules for 5hmC and 5mC Brain Samples: A Intra- and Inter-Species Case-Study Between Human and Rhesus, *BMC Genetics*, **19(9)**, Online Version: DOI: 10.1186/s12863-017-0574-7, 2018.

24. Sinha, D., Kumar, A., Kumar, H., Bandyopadhyay, S. and Sengupta, D.: dropClust: Efficient clustering of ultra-large scRNA-seq data, *Nucleic Acids Research*, **46(6**), 1-9, Online Version: DOI: 10.1093/nar/gky007, 2018.

Documentation, Research and Training Centre, Bangalore

1. Adhikari, A., Dutta, B., Dutta, A., Mondal, D. and Singh, S.: An Intrinsic Information Content Based Semantic Similarity Measure Considering The Disjoint Common Subsumers Of Concepts Of An Ontology, *Journal of the Association for Information Science and Technology (JASIST)*, Online Version: DOI: https://doi.org/10.1002/asi.24021, 2018.

2. Biswas, S. and Madalli, D.P.: Bibliographic Concept classification in Reference to FRBR and QDC, *IASLIC Bulletin*, **62(2)**, 91-106, 2017.

3. Dutta, B.: Examining the interrelatedness between ontologies and Linked Data, *Library Hi Tech*, **35(2)**, 312-331, Online Version: https://doi.org/10.1108/LHT-10-2016-0107, 2017.

4. Jayamma, K,V. and Krishnamurthy, M : Perspectives of Library Automation in developing Countries A review, *Asian Journal of Information Science and Technology*, **7(2),** 39-46, Online Version: DOI: http://www.trp.org.in/issues/perspectives-of-library-automation-in-developing-countries-a-review, 2017.

5. Namtirtha, A., Dutta, A. and Dutta, B.: Identifying influential spreaders in complex networks based on kshell hybrid method, *Physica A: Statistical Mechanics and its Applications*, **499**, 310-324, Online Version: DOI: https://doi.org/10.1016/j.physa.2018.02.016, 2018.

6. Padmavathi, T. and Krishnamurthy. M.: Semantic Web Tools and Techniques for Knowledge Organization: An Overview, *Knowledge Organisation*, **44(4)**, 273-290, 2017.

7. Reddy, Subhash B., Krishhnamurthy, M. and Asundi, A.Y.: Information Use, User, User Needs and Seeking: A perspective review of contemporary literature, *DESIDOC journal of Library and Information Science,* **38(2)**, 82-87, Online Version: DOI: http://dx.doi.org/10.14429/djlit.38.2.12098, 2018.

8. Subramanyam, N., Krishnamurthy, M. and Asundi, A.Y : IndMed : An Evaluative Study on the Coverage of Indian Medical Literature, *SRELS journal of Information Management*, **54(1),** 31-36, Online Version: DOI: http://www.informaticsjournals.com/index.php/srels/article/ view/ 6000, 2017.

9. Subramanyam, N., Krishnamurthy. M. and Asundi, A.Y: Developmental features of biomedical bibliographic databases, *Annals of Library and Information Studies*, **64(1)**, 16-20, 2017.

10. Sajana, C. and Krishnamurthy, M.: Research contributions of space technology scientists: A Scientometric study, *COLLNET Journal of Scientometrics and Information Management*, **11,** 1-19, Online Version: DOI: https://doi.org/10.1080/09737766.2017.1312788, 2017.

Systems Science and Informatics Unit, Bangalore

1. Bhattacharya, A., Bruzzone, L., Sagar, B.S.D. and Rosen, P.A.: Applied Earth Observation and Remote Sensing in India, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, **10 (12)**, 5151-5154, 2017.

2. Challa, A., Danda, S., Sagar, B.S.D. and Najman, L.: Some Properties of Interpolations Using Mathematical Morphology, *IEEE Transactions on Image Processing*, **27 (4)**, 2038-2048, 2018.

3. Kumar, D.A., Meher, S.K. and Kumari, K.P.: Knowledge-Based Progressive Granular Neural Networks for Remote Sensing Image Classification, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, **10 (12)**, 5201-5212, 2017.

4. Majumdar, K., and Jayachandra, Srinath,: A geometric analysis of time series leading to information encoding and a new entropy measure, *Journal of Computational and Applied Mathematics*, **328**, 469-484, 2018.

5. Meher, S.K.: Efficient pattern classification model with neuro-fuzzy networks, *Soft Computing*, Springer, **21**, 3317–3334, 2017.

6. Meher, S.K, Behera, S.K., Rene, E.R. and Park, H-C.: Comparative analysis on the application of neuro-fuzzy models for complex engineered systems: Case study from a landfill and a boiler, *Expert Systems*, Online Version: DOI: 10.1111/exsy.12215, 2017.

7. Majumdar, K., Ravi, G.S., Prasad, P.D., Nagappa, M., Thennarasu, K., Taly, A. B. and Sinha, S.: NREM Sleep and Anti-epileptic medications modulate epileptiform activity by altering cortical synchrony, C. Nayek, T. Mariappa, *Journal of Clinical EEG & Neuroscience*, Online Version: https://doi.org/10.1177/1550059417747436, 2017.

8. Nayek, C., Mariappa, T., Majumdar, K., Prasad, P.D., Ravi, G.S., Nagappa, M., Thennarasu, K., Taly, A.B. and Sinha, S.: Heightened background cortical

synchrony in patients with epilepsy during awake and sleep stages-an ensemble phase locking measure based study, *Clinical EEG & Neuroscience*, **49(3)**, 177-186, 2018.

9. Puneet, Dheer, Chaitanya, Ganne, Diana, Pizarro, Rosana, Esteller, Majumdar, K. and Sandipan, Pati: Seizure detection and network dynamics of generalized convulsive seizures- towards rational designing of closed-loop neuromodulation, *Neuroscience Journal*, **Article ID 9606213**, 2017.

10. Sagar, B.S.D.: Variable-Specific classification of zones, pairs of zones, and clusters of a spatial system via modified gravity model, *IEEE Transactions on Emerging Topics in Computing*, Online Version: DOI: 10.1109/TETC.2016.2633436, 2018.

Computer Science Unit, Chennai

1. Francis, Mathew C., Jacob, Dalu and Jana, Satyabrata: Uniquely Restricted Matchings in Interval Graphs, *SIAM Journal of Discrete Mathematics,* **32(1)**, 148-172, 2018.

2. Ghosh, S. and Verbrugge, R.: Studying strategies and types of players: Experiments, logics and cognitive models, *Synthese*, 1-43, 2017.

3. Karthick, T: Independent sets in some classes of $S_{i,j,k}$-free graphs, *Journal of Combinatorial Optimization*, **34(2),** 612-630, 2017.

4. Karthick, T: Star Coloring of certain graph classes, *Graphs and Combinatorics*, **34(1)**, 109-128, 2018.

5. Karthick, T. and Frederic, Maffray: Coloring (gem, co-gem)-free graphs, *Journal of Graph Theory*, Online Version: https://doi.org/10.1002/jgt.22251*,* 2018.

Cryptology and Security Research Unit, Kolkata

1. Chakraborty, D., Ghosh, S. and Sarkar, P.: A Fast Single-Key Two-Level Universal Hash Function. IACR Trans, *Symmetric Cryptology,* **2017(1)**: 106-128, 2017.

2. Chakraborty, D., Mancillas-López, C. and Sarkar, P.: Disk encryption: do we need to preserve length? *J. Cryptographic Engineering,* **8(1)**, 49-69, 2018.

3. Chatterjee, T., Ruj, S. and DasBit, S.: Security Issues in Named Data Networks, *IEEE Computer*, **51(1)**, ONLINE VERSION: DOI: 10.1109/MC.2018.1151010, 2018.

4. Datta, N., Dutta, A., Nandi, M., Paul, G.and Zhang, L.: Single Key Variant of PMAC_Plus. IACR Trans, *Symmetric Cryptol*, **2017(4)**, 268-305, 2017.

5. De, S.J. and Ruj, S: Efficient Decentralized Attribute Based Access Control for Mobile Clouds*, IEEE Transactions on Cloud Computing*, Online Version: DOI: 10.1109/TCC.2017.2754255, 2017.

6. Gangopadhyay, S., Paul, G., Sinha, N. and Stanica, P.: Generalized nonlinearity of S-boxes, *Adv. in Math. of Comm,* **12(1)**, 115-122, 2018.

7. Jana, A., Paul, G.: Revisiting RC4 key collision: Faster search algorithm and new 22-byte colliding key pairs, *Cryptography and Communications,* **10(3)**, 479-508, 2018.

8. Maitra, A., Paul, G. and Roy, S.: Device-independent quantum private query, *Physical Review A*, Article 042344, **95(4)**, 2017.

9. Paul, G. and Ray, S.: On data complexity of distinguishing attacks versus message recovery attacks on stream ciphers, *Des. Codes Cryptography,* **86(6)**, 1211-1247, 2018.

10. Rai, A. and Paul, G.: Strong quantum solutions in conflicting-interest Bayesian games, *Physical Review A*, article 042340, **96**, 2017.

11. Sengupta, B. and Ruj, S.: Efficient Proofs of Retrievability with Public Verifiability for Dynamic Cloud Storage, *IEEE Transactions on Cloud Computing*, Online Version: DOI: 10.1109/TCC.2017.2767584, 2017.

12. Tahir, S., Ruj, S., Rahulamathavan, Y., Rajarajan, M. and Glackin, C.: A New Secure and Lightweight Searchable Encryption Scheme over Encrypted Cloud Data, *IEEE Transactions on Emerging Topics in Computing*, Online Version: DOI: 10.1109/TETC.2017.2737789, 2017.

Physics and Earth Sciences Division

Geological Studies Unit, Kolkata

1. Abrahami, R., Huyghe, P., vanderBeek, P., Lowick, S., Carcaillet, J. and Chakraborty, T.: Late Pleistocene - Holocene development of the Tistamegafan (West Bengal, India): Be cosmogonic and IRSL age constraints, *Quaternary Science Reviews*, **185**, 69-90, 2018.

2. Das, S.S., Saha, S., Bardhan, S., Mallick, S. and Allmon. W.D.: The oldest turritelline gastropods: from the Oxfordian (Upper Jurassic) of Kutch, India, *Journal of Palaeontology*, Online Version: DOI: 10.1017/jpa.2017.89, 2018.

3. Dasgupta, S., Ghosh, P. and Gierlowski-Kordesch, E.: A Discontinuous Ephemeral Stream Transporting Mud Aggregates in A Continental Rift Basin: The Late Triassic Maleri Formation, India, *Journal of Sedimentary Research,* **87**, 838-865. 2017.

4. More, S., Rit, R., Khan, M.A., Paruya, D.K., Taral, S., Chakraborty, T. and Bera, S.: First report of plant remains cf. Sloanea (Elaeocarpaceae) from the Middle Siwalik of Darjeeling sub-Himalaya, India and its palaeobiogeographic implications, *Journal of the Geological Society of India*, **91**, 301-306, 2018.

5. Patranabis-Deb, S., Majumder, T and Khan, S.: Lifestyles of the Palaeoproterozoicstromatolite builders in the Vempalle Sea, Cuddapah Basin, India, *Journal of Asian Earth Sciences*, **157**, 360-370, 2018.

6. Saha, D., Mazumder, R. and Kar, R.: Shallow marine to pelagic sediments from a dismembered ophiolite, Kandra, southern India-Glimpses of ancient subduction zone related sedimentation, *Gondwana Research* **49**, 21-41, 2017.

7. Sengupta, S., Ezcurra, M.D. and Bandyopadhyay, S.: A new horned and long- necked herbivorous stem-archosaur from the Middle Triassic of India, *Scientific Reports*, **7**, 8366, 2017.

8. Taral, S., Kar, N. and Chakraborty, T.: Wave-generated structures in the Siwalik rocks of Tista valley, eastern Himalaya: implication for the regional paleogeography, *Current Science*, **113(5)**, 889-901, 2017.

Physics and Applied Mathematics Unit, Kolkata

1. Bera, B.K., Ghosh, D., Parmananda, P., Osipov, G.V. and Dana, S.K.: Coexisting synchronous and asynchronous states in locally coupled array of oscillators by partial self-feedback control, *CHAOS,* **27**, 073108 (9 pages), 2017.

2. Banerjee, R., Bera, B. K., Ghosh, D, and Dana, S.K.: Enhancing synchronization in chaotic oscillators by induced heterogeneity, *Eur. Phys. J. Special Topics,* **226**, 1893–902, 2017.

3. Bera, B.K., Majhi, S., Ghosh, D. and Perc, M.: Chimera states: Effects of different coupling topologies, *Europhysics Letters*, **118,** 10001 (7 pages), 2017.

4. Bera, B. K., Majhi, S. and Ghosh, D.: Resurgence of oscillation in coupled oscillators under delayed cyclic interaction, *Eur. Phys. J. B*, **90**, 132 (9 pages), 2017.

5. Chatterjee, D., Mazumder, B.S. and Ghosh, S.: Turbulence characteristics of wave- blocking phenomena, *Applied Ocean Research*, **75**, 15-36, Online Version: 10.1140/epjc/s10052-017-5189-7, 2018.

6. Chandra, D. and Pal, S.: A proposal for constraining initial vacuum by cosmic microwave background, *Classical and Quantum Gravity*, **35**, 015008, 2017.

7. Dey, S., Lodh, R. and Sarkar, S.: Turbulence characteristics in wall-wake flows downstream of wall-mounted and near-wall horizontal cylinders, *Envioromental Fluid Mechanics,* 1-13, Online Version: DOI:10.1007/s10652-018-9573-0, 2018.

8. Dey, S., Swargiary, D., Sarkar, S., Fang, H. and Gaudio, R.: Turbulence features in a wall-wake flow downstream of a wall-mounted vertical cylinder, *European Journal of Mechanics/B Fluids,* **69**, 46-61, 2018.

9. Dey, S., Swargiary, D., Sarkar, S., Fang, H. and Gaudio, R.: Self-similarity in turbulent wall-wake flow downstream of a wall-mounted vertical cylinder, *Journal of Hydraulic Engineering,* (ASCE), **144**, 6, 04018023(1–12), Online Version: DOI: 10.1061/(ASCE)HY.1943-7900.0001457, 2018.

10. Dalmazi, D., Santos, A.L.R. dos, Ghosh, S. and Mendonca, E.L.: Weyl and transverse diffeomorphism invariant spin-2 models in D=2+1, 10.1103, *Phys. Rev D*, **96,** 111901, **77:620**, *Eur. Phys. J.C*, Online Version: https://doi.org/10.1140/epjc/s10052-017-5189-7, 2017.

11. Das, P. Sk, Ripon and Ghosh, S.: Motion of charged particle in Reissner-Nordstrom space-time: A Jacobi metric approach, **77:620**, *Eur. Phys. J.C*., Online Version: DOI:.org/10.1140/epjc/s10052-017-5295-6.

12. Das, P. and Ghosh, S. : Galilei group with multiple central extension, vorticity and and entropy generation : 'Exotic' fluid in 3 + 1-dimensions, *Phys. Rev. D,(Rapid Comm.)* **96**, 111901, 2017.

13. Ghosh, S.: Particle on a torus knot: anholonomy and hannay angle, *Int. Jour. Geom. Methods Mod. Phys*, Online Version: DOI:.org/10.1142/S0219887818500974.

14. Ghosh, D., Khajanchi, S., Mangiarotti, S., Denis, F., Dana, S.K. and Letellier, C.: How tumor growth can be influenced by delayed interactions between cancer cells and the microenvironment? *Bio, Systems*, **158**, 17–30, 2017.

15. Goremyko, M. V., Maksimenko, V. A., Makarov, V. V., Ghosh, D., Bera, B., Dana, S. K. and Hramov, A. E.: Interaction of Chimera States in a Multilayered Network of Nonlocally Coupled Oscillators, *Technical Physics Letters,* **43(8)**, 712–715, 2017.

16. Kundu, S., Majhi, S., Sasmal, S.K., Ghosh, D. and Rakshit, B.: Survivability of a metapopulation under local extinctions, *Physical Review E*, **96**, 062212 (13 pages), 2017.

17. Kundu, S., Majhi, S., Bera, B. K., Ghosh, D. and Lakshmanan, M.: Chimera states in two-dimensional networks of locally coupled oscillators, *Physical Review E*, **97**, 022201 (12 pages), 2018.

18. Letellier, C., Sasmal, S. K., Draghi, C., Denis, F. and Ghosh, D.: A chemotherapy combined with an anti-angiogenic drug applied to a cancer model including angiogenesis, *Chaos, Solitons and Fractals,* **99**, 297–311, 2017.

19. Le, Dai-Nam, Le, Van-Hoang and Roy, Pinaki: Conditional electron confinement in graphene via smooth magnetic fields, *Physica*, **E96**, 17-22, 2017.

20. Majhi, S., Perc, M. and Ghosh, D.: Chimera states in a multilayer network of coupled and uncoupled neurons, *CHAOS*, **27**, 073109 (10 pages), 2017.

21. Majhi, S. and Ghosh, D.: Synchronization of moving oscillators in three dimensional space, *CHAOS,* **27**, 053115 (11 pages), 2017.

22. Majhi, S. and Ghosh, D.: Amplitude death and resurgence of oscillation in networks of mobile oscillators, *Europhysics Letters*, **118,** 40002 (7 pages), 2017.

23. Maiti, S.K., Sil, S. and Chakrabarti, A.: Phase controlled metal-insulator transition in multi-leg quasi-periodic optical lattices, *Annals of Physics*, **382**, 150, 2017

24. Nath, D., Gao, Y., Mareswarnan, R. Babu, Kanna, T. and Roy, B.: Bright-dark and dark-dark solitons in coupled nonlinear Schrödinger equation with PT symmetric potentials, *Chaos,* **27**, 123102-1-10, 2017.

25. Nath, D. and Roy, P.: κ deformed Dirac equation in crossed magnetic and electric fields, *Eur. Phys. J Plus*, **132**, 416-419, 2017.

26. Patra, M. and Maiti, S.K.: All-spin logic operations: memory device and reconfigurable computing, *Europhysics Letters,* **121,** 38004, 2018.

27. Patra, M. and Maiti, S. K.: Analytical study of nano-scale operations, *Physics E: Low-Dimensional Systems and Nanostructures*, **101**, 151, 2018.

28. Patra, M. and Maiti, S. K.: Logical operations using phenyl-ring, *Physics Letters A*, **382**, 420, 2018.

29. Patra, M. and Maiti, S.K.: Externally controlled high degree of spin polarization and spin inversion in a conducting junction: Two new approaches, *Scientific Reports*, **7,** 14313, 2017.

30. Rakshit, S., Majhi, S., Bera, B K., Sinha, S. and Ghosh, D.: Time-varying multiplex network: Intralayer and interlayer synchronization, *Physical Review E,* **96**, 062308 (8 pages), 2017.

31. Rakshit, S., Bera, B. K., Perc, M. and Ghosh, D.: Basin stability for chimera states, *Scientific Reports,* **7,** 2412 (12 pages), 2017.

32. Rana, S. Parashar, P., Winter, A. and Lewenstein, M.: Logarithmic Coherence: Operational Interpretation of l_1-Norm Coherence, *Phyical Review A,* **96,** 052336 (1-11), 2017.

33. Singal, T., Rahaman, R. Ghosh, S. and Kar, Guruprasad: Necessary condition for local distinguish-ability of maximally entangled states: beyond orthogonality preservation, *Phys. Rev.,* **A96**, 042314 (1-10), 2017.

34. Saha, M. and Maiti, S.K.: High degree of current rectification at nanoscale level, *Physica E: Low-Dimensional Systems and Nanostructures*, **93**, 275, 2017.

35. Schulze-Halberg, Axel and Roy, B.: Higher-order supersymmetric partners of generalized quantum nonlinear oscillators, *European Physical Journal Plus*, **133**, 102 (1-17), 2018.

36. Schulze-Halberg, Axel and Roy, P.: Construction of zero-energy states in graphene through the super-symmetry formalism, *J. Phys*., **A50,** 365205 (1-22), 2017.

37. Schulze-Halberg, Axel and Roy, P.: Bound states of the two-dimensional Dirac equation for an energy-dependent hyperbolic Scarf potential, *J. Math. Phys*., **58**, 113507 (1-12), 2017.

38. Siu, Z.B., Chowdhury, D., Basu, B. and Jalil, M.B.A.: Electric-field induced spin accumulation in the Landau level states of topological insulator thin films, *Journal of Physics D: Applied Physics,* **50**, 325306 (1-11), 2017.

Biological Sciences Division

Agricultural and Ecological Research Unit, Kolkata

1. Bag, A and Chattopadhyay, R.R.: Evaluation of antioxidant potential of essential oils of some commonly used Indian spices in in vitro models and in food supplements enriched with omega-6 and omega-3 fatty acids, *Environmental Science and Pollution Research*, **25**, 388-398, 2018.

2. Bag, A. and Chattopadhyay, R.R.: Synergistic antibacterial and antibiofilm efficacy of Nisin in combination with *p*-Coumaric acid against foodborne bacteria Bacillus cereus and Salmonella typhimurium*, Letters in Applied Microbiology,* **65**, 366-372, 2017.

3. Banerjee, A.K. and Dewanji, A.: Native exotic relationships in plant communities: the role of exotic dominance in framing community composition, *Ecological Research,* **32(5)**, 653-665, 2017.

4. Banerjee, A.K., Mukherjee, A. and Dewanji, A.: Potential distribution of *Mikania micrantha* Kunth in India − evidence of climatic niche and biome shifts, *Flora,* **234,** 215–223, 2017.

5. Banerjee, A.K., Reddy, C.S. and Dewanji, A.: Impact assessment on floral composition and spread potential of *Mikania micrantha* H.B.K. in an urban scenario The National Academy of Sciences, India, *Section B: Biological Sciences*, **87(3),** 777-788, 2017.

6. Banerjee, S., Subramanian, A., Chattopadhyay, J. and Sarkar, R.R.: Exploring the role of

GS-GOGAT cycle in microcytin synthesis and regulation-a model based analysis, *Molecular BioSystems,* **13**, 2603-2614, 2017.

7. Barik, S., Roy, P. and Basu, S.: Effect of Fertilizer Nitrogen & Potassium on Difference Cultivars of Sweet Sorghum (*Sorghum bicolor* L. Moench) in North-24-Parganas, West Bengal, *International Journal of Applied Agricultural Research*, **12(2)**,199-210, 2017.

8. Bharali A, Baruah K.K., Baruah S.G. and Bhattacharyya P.: Impacts of integrated nutrient management on methane emission, global warming potential and carbon storage capacity in rice grown in a northeast India soil, *Environmental Science and Pollution Research*, **25**, 5889-5901, 2018.

9. Bharali, A., Baruah, K.K., Bhattacharyya, Pradip and Gorh, D.: Integrated nutrient management in wheat grown in a northeast India soil: Impacts on soil organic carbon fractions in relation to grain yield, *Soil and Tillage Research*, **168**, 81-91, 2017.

10. Borah, P., Paul, A., Bora, P., Bhattacharyya, P., Karak, T. and Mitra, S.: Assessment of heavy metal pollution in soils around a paper mill using metal fractionation and multivariate analysis, *International Journal of Environmental Science and Technology*, **14**, 2695-2708, 2017.

11. Chakraborty, B., Bhowmick, A.R., Chattopadhyay, J. and Bhattacharya, S.: Physiological responses of fish under environmental stress and extension of growth (curve) models, *Ecological Modelling,* **363***,* 172-186, 2017.

12. Chatterjee, A., Sudarshan, M. and Dewanji, A.: A Silver-Lining in *Alternanthera philoxeroides* Invasion: Exploring Sustainable Alternative Use in the Tropics, *International Journal of Ecology and Environmental Sciences,* **43(3),** 229-238, 2017.

13. Das, P., Barua, S., Sarkar, S., Karak N., Bhattacharyya P., Raza N., Kim Ki-Hyun and Bhattacharya S.S.: Plant extract–mediated green silver nanoparticles: Efficacy as soil conditioner and plant growth promoter, *Journal of Hazardous Materials*, **346**, 62–72, 2018.

14. Das, S., Debnath, N., Pradhan, S. and Goswami A.: Enhancement of photon absorption in the light-harvesting complex of isolated chloroplast in the presence of plasmonic gold nanosol—a nanobionic approach towards photosynthesis and plant primary growth augmentation, *Gold Bulletin*, **50**, 247–257, Online Version: DOI: 10.1007/s13404-017-0214-z, 2017.

15. Dasgupta, N., Hazra, A., Bhattacharya, S. and Das, S.: Molecular markers assisted DNA polymorphism: Implications in mangrove research, *Plant Science Today,* **4(4)**, 166-171, Online Version: DOI: 10.14719/pst.2017.4.4.349, 2017.

16. Dasgupta, N., Nandy, P., Sengupta, C. and Das, S.: Assessment of genetic variation of three mangroves from Indian Sundarbans using RAPD and ISSR markers in relation to their adaptability, *Journal of Forestry Research*, **29**, 301-310, 2018.

17. Dasgupta, N., Nandy, P., Sengupta, C. and Das, S.: Occurrence of secondary metabolites and free radical scavenging ability towards better adaptability of some mangrove species in elevated salinity of Indian Sundarbans, *Annals of Tropical Research*, **39(1)**, 12-40, 2017.

18. Elmojtaba, I.M., Biswas, S. and Chattopadhyay, J.: Global analysis and optimal control of a periodic Visceral Leishmaniasis model, *Mathematics*, **5(4)**, 78(1-18), 2017.

Publications

19. Ghosh, K., Biswas, S., Samanta, S., Tiwari, P.K., Alshomrani, A.S. and Chattopadhyay, J.: Effect of multiple delays in an eco-epidemiological model with strong Allee effect*, International Journal of Bifurcation and Chaos*, **27(11)**, 1750167(1-39), 2017.

20. Hazra A., Bhattacharya S. and Banik P.: A Bayesian Zero-Inflated Exponential Distribution Model for the Analysis of Weekly Rainfall of the Eastern Plateau Region of India, *Mausam*, **69(1),** 19-13, 2017.

21. Hazra, A., Dasgupta, N., Sengupta, C. and Das, S.: Computational characterization of MIPS in Camellia sinensis and phylogenetic implication, *International Journal of Cell Science and Molecular Biology,* **2(5)**, 555597, Online Version: DOI: 10.19080/IJCSMB.2017.02. 555597, 2017.

22. Hazra, A., Dasgupta, N., Sengupta, C. and Das, S.: Extrapolative microRNA precursor based SSR mining from tea EST database in respect to agronomic traits, *BMC Research Notes,* **10**, 261, Online Version: DOI: 10.1186/s13104-017-2577-x,2017.

23. Hazra, A., Nandy, P., Sengupta, C. and Das, S.: MIPS sequences: a promising molecular consideration in angiosperm phylogeny and systematic, *Biotechnologia,* **99(1)**, 5–12, Online Version: DOI: 10.5114/bta.2018.73558, 2018.

24. Hazra, A., Saha, J., Dasgupta, N., Sengupta, C., Mohan Kumar, P and Das, S.: Well-being attributes of Indian processed teas: a comparative approach, *American Journal of Plant Science,* **8**, 1607-1623, Online Version: DOI: 10.4236/ajps.2017.87111, 2017.

25. Kumar, R., Gopal, M., Verma, S., and Goswami A.: Influence of Nanohexaconazole on ergosterol biosynthesis in *Rhizoctoniasolani* Kuhn and Molecular Characterization of Sclerotial Fungi, *Advanced Science, Engineering and Medicine,* **9**,122-129, Online Version: DOI: 10.1166/asem.2017.1970, 2017.

26. Mandal Biswas, S., Chakraborty, N. and Bhowmik, P.C.: Heneicosane - A Resistance Marker in Cuticular Wax of *Tectonagrandis* L. Leaves, *Biochemistry & Analytical Biochemistry*. **6(313)**, 2161-1009(1-7), 2017.

27. Mondal, A., Das, S., Sah, R.K., Bhattacharyya, P. and Bhattacharya, S.S: Environmental footprints of brick kiln bottom ashes: geostatistical approach for assessment of metal toxicity, *Science of the Total Environment*, **609**, 215-224, 2017.

28. Pal, A., Bhowmick, A.R., Yeasmin, F., and Bhattacharya, S.: Evolution of Model Specific Relative Growth Rate: Its Genesis and Performance Over Fisher's Growth Rates, *Journal of Theoretical Biology,* **444***,* 11-27, 2018.

29. Panday, P., Pal, N., Samanta, S. and Chattopadhyay, J.: Stability and bifurcation analysis of a three-species food chain model with fear, *Int. J. Bifur. Chaos*, **28(01)**, 1850009(1-20), 2018.

30. Pal, N., Samanta, S., Martcheva, M. and Chattopadhyay, J**.:** Role of bi-directional migration in two similar type of ecosystems, *Mathematics*, **6(3)**, 36(1-16), 2018.

31. Panja, P., Mondal, S.K. and Chattopadhyay, J.: Dynamical study in Fuzzy threshold dynamics of a Cholera epidemic model, *Fuzzy Information and Engineering*, **9(3)**, 381-401, 2017.

32. Phukan, M., Savapondit, D., Hazra, A., Das, S. and Pramanik, P.: Algorithmic derivation of CO_2 assimilation based on some physiological parameters of tea bushes in North-East India, *Ecological Indicators*, **91**, 77–83, Online Version: DOI: 10.1016/j.ecolind.2018.03.091, 2018.

33. Roy,P., Basu, S., Chatterjee, J., Goswami, A. and Barik, S.: Response of Various Yield of Sweet Sorghum Crop (*Sorghum bicolour* L. Moench) to Different Levels of Fertilizer in Lateritic Soil of Birbhum, West Bengal, *International Journal of Agriculture, Environment and Biotechnology*, **11(1)**, 25-32, Online Version: DOI:10.30954/0974-1712.2018.00178.3, 2018.

34. Saifuddin, Md., Samanta, S., Biswas, S. and Chattopadhyay, J. An eco-epidemiological model with different coefficients and strong-Allee in the prey, *Int. J. Bifur. Chaos*, **27**, 1730027(1-23), 2017.

35. Singh, P., Mitra, S., Majumdar, D., Bhattacharyya, P., Prakash, A., Borah, P., Paul, A. and Rangan, L.: Nutrient and enzyme mobilization in earthworm casts: A comparative study with addition of selective amendments in undisturbed and agricultural soils of a mountain ecosystem, *International Biodeterioration & Biodegradation*, **119**, 437-447, 2017.

36. Thapa, M., Roy, I. and Goswami, A.: Nanohexaconazole: Synthesis, characterization and efficacy of a novel fungicidal nanodispersion, *IET Nanobiotechnology*, **7**, Online Version: DOI: 10.1049/iet-nbt.2018.0041, 2018.

37. Tiwari, P.K., Sasmal, S.K., Sha, A., Venturino, E. and Chattopadhyay, J.: Effect of diseases on symbiotic systems, *BioSystems*, **159**, 36-50, 2017.

Biological Anthropology Unit, Kolkata

1. Bhattacharya, A., Malakar, B., Chowdhury, T.K., Mukherjee, S. and Roy, S.K.: Study on Demographic traits of two Oraon Occupational groups of Alipurduar District, West Bengal, *Indian Journal of Physical Anthropology & Human Genetics*, **35 (2)**, 187-200, 2016.

2. Christiane S., Krutzfeldt, L-M, Dasgupta, P. and Hermanussen, M.: No association between fat tissue and height in 5019 children and adolescents measured between 1982 and 2011 in Kolkata, *Anthropologischer Anzeiger*, **74(5**), 403-411, 2018.

3. Malakar, B and Roy, S.K.: Effect of socio-economic characteristics on fertility and under-five mortality: examples from the Santals of Birbhum district, West Bengal, India, *Anthropological Review*, **80 (3),** 323-334, 2017.

Human Genetics Unit, Kolkata

1. Chattopadhyay, E., Ghose S., Ray, A., Anjum, N., Majumder, A. and Roy, B.: A novel mutation at ANTXR1 in an Indian patient with growth retardation-alopecia-pseudoanodontia-optic atrophy syndrome, *Oral Surgery Oral Medicine Oral Pathology Oral Radiology*, PMID: 28870703, **124**, 261-265, 2017.

2. Das Ghosh, D., Mukhopadhyay, I., Bhattacharya, A., Roy Chowdhury, R., Mandal, N.R., Roy,S. and Sengupta, S.: Impact of genetic variations and transcriptional alterations of HLA class I genes on cervical cancer pathogenesis, *International Journal of Cancer,* **140(11)**, 2498-2508, Online Version: DOI: 10.1002/ijc.30681, 2017.

3. Das, A, Chandra, A, Chakraborty, J, Chattopadhyay, A, Senapati S, Chatterjee, G. and Chatterjee, R.: Associations of ERAP1 coding variants and domain specific interaction with HLA-

C*06 in the early onset psoriasis patients of India, *Human Immunology*, **78(11-12)**, 724-730, 2017**.**

4. Datta, A, Ghatak, D, Das, S, Banerjee, T, Paul, A, Butti, R, Gorain, M, Ghuwalewala, S, Roychowdhury, A, Alam, SK Kayum, Das, P, Chatterjee, R., Dasgupta, M., Panda, C., Kundu, G., and Roychoudhury, S: p53 gain-of-function mutations increase Cdc7-dependent replication initiation, *EMBO Reports*, **18(11)**, 2030-2050, 2017.

5. Gallagher, P.S., Larkin, M., Thillainadesan, G., Dhakshnamoorthy, J., Balachandran, V., Xiao, H., Wellman, C., Chatterjee, R., Wheeler, D. and Grewal, S.I.S.: Iron homeostasis regulates facultative heterochromatin assembly in adaptive genome control, *Nature Structural & Molecular Biology*, Online Version: DOI:10.1038/s41594-018-0056-2, 2018.

6. Karmakar, B. and Mukhopadhyay, I.: Risk efficient estimation of fully dependent random coefficient autoregressive models of general order, *Communications in Statistics-Theory and Methods*, Online Version: https://doi.org/10.1080/03610926.2017.1371758, 2017.

7. Pal, A, Garain, U. (CVPRU), Chandra, A, Chatterjee R and Senapati, S.: Psoriasis skin biopsy image segmentation using deep convolutional neural network, *Computer Methods and Programs in Biomedicine,* **159**, 59-69, 2018.

8. Singh, R., De Sarkar, N., Sarkar, S., Roy, R., Chattopadhyay E., Ray, A., Biswas, N.K., Maitra, A. and Roy, B..: Analysis of the whole transcriptome from gingivo-buccal squamous cell carcinoma reveals deregulated immune landscape and suggests targets for immunotherapy, *Plos One*, PMID: 28886030, **12(9)**, 2017.

9. Tiwari, P., Kutum, R., Sethi, T., Shrivastava, A., Girase, B., Aggarwal, S., Patil, R., Agarwal, D., Gautam, P., Agrawal, A., Dash, D., Ghosh, S., Juvekar, S., Mukerji, M. and Prasher, B.: Recapitulation of Ayurveda constitution types by machine learning of phenotypic traits, *PLoS One,* 12:e0185380, 2017.

Social Sciences Division

Economic Research Unit, Kolkata

1. Alkire, Sabina, Apablaza, Mauricio, Chakravarty, Satya R. and Yalonetzky, Gaston: Measuring Chronic Multidimensional Poverty, *Journal of Policy Modeling,* **39**, 983-1006, 2017.

2. Bakshi, D. and Dasgupta, I.: A Model of Dynamic Conflict in Ethnocracies, *Defence and Peace Economics*, **29(2**), 147-170, 2018**.**

3. Banerjee, S., Biswas, S., Bharati, S. (SRU), Pal, M. and Bharati, P.: Growth and Nutritional Status among Pre-adolescent and adolescent Bengali boys and girls in North 24 Parganas, West Bengal, India, *Human Biology Review,* **6(4),** 325-345, 2017.

4. Bharati, S. (SRU), Islam, Md. A., Chakrabarty, S., Pal, M. and Bharati, P.: Patterns, Determinants and Comparative Account of Son Preferences in India, *Genus Homo*, **1**, 12-31, 2017.

5. Bharati, S. (SRU), Pal, M**.**, Shome (SRU), S., Roy, P., Dhara, P. and Bharati, P.: Influence of Socio-Economic Status and Television Watching on Childhood Obesity in Kolkata, *HOMO - Journal of Comparative Human Biology*, **68,** 487–494, 2017.

6. Bharati, S., Pal, M., Hossain, M.G. and Bharati, P.: Validity of Different Methods for Assessing Overweight among Children Aged 6-10 Years in Kolkata, India**,** *Malaysian Journal of Nutrition*., **23(2)**, 219-225, 2017.

7. Chowdhury, K.B., Kundu, S. and Sarkar, N.: Regime Dependent Effects of Uncertainty on Inflation and Output Growth: Evidence from the United Kingdom and the United States, *Scottish Journal of Political Economy*, Online Version: DOI: 10.1111/sjpe.12168, 2017.

8. Dasgupta, I. and Guha Neogi, R.: Between group Contests over Group-Specific Public Goods with Within-Group Fragmentation, *Public Choice*, **174(3-4**), 315-334, 2018.

9. Dasgupta, I. and Kar, S.: The Labor Market in India Since the 1990s, *IZA World of Labor*, **425**Online Version: DOI: 10.15185/izawol.425, 2018,.

10. De, U. K. and Pal, M**.**: A Generalized Measure of Diversity: Application to Longitudinal Data on Crop-groups in North-East India, *Journal of the Indian Society of Agricultural Statistics*, **71(3),** 253–263, 2017.

11. Ghosh, A., Ghosh, C. and Bhattacharjee, M.: Macroeconomics of Development and Banking Sector Reforms in India, *Artha Beekshan*, **27(1),** 60-77, 2018.

12. Kabiraj, T**.** and Modak, M.: R&D Incentives in an Upstream-Downstream Structure, *Indian Economic Review*, **51(1-2),** 43-68, 2017.

13. Kabiraj, T. and Sinha, U.B.: Outsourcing under Incomplete Information, *Indian Growth and Development Review***, 10(1),** 3-15, 2017.

14. Majumder, A., Ray, R. and Santra, S: The World Bank's Poverty Enumeration: How Transparent is the Process, How Sound is the Methodology and How Reliable are the Numbers? *Economic and Political Weekly*, **LII (24)**, 43-52, 2017.

15. Majumder, A., Ray, R. and Santra, S: Sensitivity of Global and Regional Poverty Rates to Alternative Purchasing Power Parities, *Indian Growth and Development Review*, **11(1),** 34-56, https://doi.org/10.1108/IGDR-09-2017-0076, 2018.

16. Majumder, A., Ray, R. and Santra, S.: Sensitivity of Purchasing Power Parity Estimates to Estimation Procedures and their Effect on Living Standards Comparisons, *Journal of Globalization and Development*, Online Version: https://DOI: 10.1515/jgd-2017-0006, 2017.

17. Mitra, Manipuspak, Chun, Youngsub and Mutuswami, Suresh: Reordering an Existing Queue, *Social Choice and Welfare*, **49(1),** 65-87, 2017.

18. Mitra, Manipuspak, and De, Parikshit: Incentives and Justice for Sequencing Problems, *Economic Theory*, **64(2),** 239-264, 2017.

19. Mitra, Manipuspak, Banerjee, Priyodorshi and Mukherjee, Conan: The Economics of the Kolkata Paise Restaurant Problem, *Science and Culture*, **84 (1-2),** 26-30, 2018.

Publications

20. Mitra, Manipuspak, Chatterjee, Kalyan and Mukherjee, Conan: Bidding Rings-A Bargaining Approach, *John Nash Memorial Special Issue-Games and Economic Behavior*, **103,** 67-82, 2017.

21. Sahoo, D., Shome, S. (SRU), Pal, M. and Bharati, P.: Women's Decision Making Autonomy and its Influence on Nutritional Health in India: A North-South Regional Comparison, *Human Biology Review*, **6(4),** 359-375, 2017.

22. Sarkar, S. and Pal, M.: On the Estimation of Lower and Upper Bounds of Poverty Line: An Illustration with Indian Data, *Social Indicators Research*, 1–24, 2017.

23. Sharma Biswas, C. and Mukhopadhyay, I.: Marital Status and Women Empowerment in India, *Sociology International Journal,* **2(1),** 30-39, 2018.

24. Shome, S. (SRU), Adak, D.K., Pal, M**.** Hossain, G. and Bharati, M.: Effect of Socio-economic and Demographic Factors on Nutritional Status of Indian Post-Adolescent Teenagers: A Set Theoretic Approach, *Journal of Life Science*, **9(1),** 33-47, 2017.

Linguistic Research Unit, Kolkata

1. Dasgupta, Probal: Pre-demonstrative gaps in Bangla: syntactic and semiotic recoverability, *Język Komunikacja Informacja*, **11**, 195-212, 2017.

2. Dasgupta, Probal: Luptoddhaar mulsutrer ki kaaje laage sanket-tattwo, *Jiggasa*, **34 (3-4)**, 437-446, 2017.

3. Dasgupta, Probal: La sudaziaj Esperanto-komunumoj kaj Nepalo, *Montejo*, **12**, 27-29, 2017.

4. Dasgupta, Probal: Onudhaaboner diganto aar Barthes-er drishtiruci, *Ebong Mushayera,* **24 (2-3)**, 84-104, 2017.

5. Dasgupta, Probal: Jakobson-paroborti kaabbotattwer sandhaane, *Alochonachakro,* **31(2)**, 217-240, 2017.

6. Dash, NiladriSekhar: Ethical Rights and Responsibilities in Linguistic Field Survey: Some Insights, *Janajati Darpan*, **1(3),** 17-29, 2017.

7. Dash, NiladriSekhar: Yantranubad: sanga, svarup, svatantrya o svarthakata (Machine Translation: Definition, nature, uniqueness and relevance), *Alochana Chakra*, **43(2),** 93-102, 2017.

8. Dash, NiladriSekhar: Language Corpora and Digital Dictionary: Chasing a Wild Dream, *Journal of Problems of Philosophy*, **3,** 40-55, 2017.

9. Dash, NiladriSekhar and Bhattacharyya, Amrita: Animal Communication System: Some Interesting Observations, *International Journal of Communication,* **27(2),** 7-45, 2017.

10. Dash, NiladriSekhar: In search of Linguistic Legacy, *Swanimam*, **3(2),** 66-70, 2017.

11. Dash, NiladriSekhar: Understanding the Form and Composition of Bangla Verbs as Decontextualized Autonomous Lexical Units, *Journal of Advanced Linguistics Studies,* **6(1&2),** 158-188, 2017.

12. Dash, NiladriSekhar: Digital Dictionary: A Phoenix in Lexicographic Metamorphosis, *Bulletin of the Dept. of Linguistics*, **20,** 27-61, 2017.

13. Pal, AlokRanjan, Saha, Diganta, Naskar, SudipKumar and Dash, NiladriSekhar: Word Sense Disambiguation in Bangla: Looking into the Adopted Methodologies and Proposing Some Extensions, *Journal of Advanced Linguistic Studies,* **6(1&2),** 45-66, 2017.

14. Vandana and Dash, NiladriSekhar: Creation and Compilation of Hindi Newspaper Text Corpus, *Language in India,* **18(2),** 436-447, 2018.

Population Studies Unit, Kolkata

1. Barman, Subhash and De, Partha: Socio-economic Inequality of Child immunization in the Eastern and North-Eastern States of India, *Demography India*, Special Issue, 16-26, ISSN: 0970-454X, 2017.

Psychology Research Unit, Kolkata

1. Chakraborty, M., Badgio, D., Ptacek, J., Biswas, A., Ghosal, M. and Chatterjee, G.: Hemispheric Asymmetry in Attention and its Impact on Our Consciousness: A Review with Reference to Altered Consciousness in Right Hemisphere Damaged Subjects, *Journal of Consciousness Studies*, **24**(**7-8**), 51-78, 2017.

2. Chatterjee, Susmita and Bhattacharya, Himani: The State and Trait Anxiety and Eating Attitudes: An Examination of Factor Analysis, *International Journal of Education and Psychological Research*, **6(2**), 25-29, 2017.

3. DuttaRoy, D.: Psychological Data Science in Reading Competency, *Journal of Psychometry*, **30 (1**), 1-7, 2017.

4. Khatoon, M. and Dutta Roy, D.: Metamemory among Adolescents: A Review, *The International Journal of Indian Psychology***, 5**(**1**), 50-62, 2017.

5. Singh, D. and Chatterjee G.: The Evolution of Religious Belief in Humans: A Brief Review with a Focus on Cognition, *Current Science,* **96(3)**, 517-524, 2017.

6. Singh, D., Mukherjee, I. and Chatterjee, G.: Parenting Behavior and Juvenile Delinquency among Low-Income Families, *Victims and Offenders*, **13(3)**, 336-348, 2018.

Sampling and Official Statistics Unit, Kolkata

1. Dihidar, K. and Bhattacharya, M.: Estimating Sensitive Population Proportion Using a Combination of Binomial and Hypergeometric Randomized Responses by Direct and Inverse Mechanism, *Statistics in Transition*, New Series, **18(2)**, 193-210, 2017.

2. Maitra, Pushkar, Mitra, Sandip, Mookherjee, Dilip, Motta, Alberto and Visaria, Sujata: Financing Smallholder Agriculture: An experiment with Agent-intermediated Microloans in India, *Journal of Development Economics*, Elsevier, **127**, 306-337, 2017.

Publications

3. Mitra, S., Mookherjee, Dilip, Torero, Maximo and Visaria, Sujata: Asymmetric Information and Middleman Margins: An Experiment with Indian Potato Farmers, *The Review of Economics and Statistics*, **100(1)**, 1-13, 2018.

4. Mukherjee, D. and Subramanian S.: On Intermediate Headcount Indices of Poverty, *Bulletin of Economic Research*, Online Version: DOI: 10.1111/boer.12135, 2017.

5. Mukherjee, D.: Economic Impact of Commodity Transaction Tax on Futures Contracts, *Prajnan*, **46(2),** 131-153, 2017.

6. Mukherjee, D., Basak, Gopal K. (SMU) and Ghosh, Mrinal (SMU): A Stochastic Model with Inflation, Growth and Technology for the Political Business Cycle, *Computational Economics*, Online Version: http://link.springer.com/article/10.1007/s10614-017-9729-x, 2017.

7. Pal, S., Dihidar, K., Mandal, G., Basak, S., Ghosh, A., Chakraborty, A.K. and Pal, S.: A Novel Approach in Robust Estimation of Optimum Size of Plots, *International Journal of Agricultural and Statistical Sciences*, **13(2**), 423-429, 2017.

8. Pal, S., Dihidar, K., Pal, S., Basak, S., Ghosh, A. and Mandal, G.: A Revisit To The Determination of Robust Optimum Plot Size, *Asian Academic Research Journal of Multidisciplinary,* **4(5)**, 61-73, 2017.

9. Singh, Prakarsh and Mitra, S.: Incentives, information and malnutrition: Evidence from an Experiment in India, *European Economic Review, Elsevier*, **93**, 24-46, 2017.

Sociological Research Unit, Kolkata

1. Banerjee, S., Biswas, S., Bharati, S., Pal, M. (ERU) and Bharati, P.: Growth and Nutritional Status among Pre-adolescent and Adolescent Bengali Boys and Girls in North 24 Parganas, West Bengal, India, *Human Biology Review,* **6(4**), 325-345, 2017.

2. Bharati, S, Pal, M. (ERU), Hossain, M.G. and Bharati, P.: Validity of Different Methods for Assessing Overweight among Children Aged 6-10 Years in Kolkata, India, *Malaysian Journal of Nutrition,* **23 (2)**, 219-225, 2017.

3. Bharati, S, Pal, M. (ERU), Shome, S., Roy, P., Dhara, P. and Bharati, P.: Influence of Socio -Economic Status and Television Watching on Childhood obesity in Kolkata, *HOMO- Journal of comparative Human Biology*, **68**, 487-494. 2017.

4. Chakraborty, Sonali: The Working Hours of Unpaid Child Workers in Handloom Industry in India, *International Social Science Journal*, 1-18, Online Version: DOI: 10.1111/ISSJ.12121, UNESCO, 2017.

5. Das, ChandanSurabhi and Jana, Rabindranath: Human-Crocodile Conflict in the Indian Sundarban: An Analysis of Spatio-Temporal Incidences in Relation to People's Livelihood, *Oryx*, 1-8, Online Version: DOI: 10.1017/s0030605316001502, 2017.

6. Goswami, Rupak, Misra, Sanchayeeta, Mondal, Tandra and Jana, Rabindranath: Social Network Analysis in the Context of Community Response to Disaster, Series on *Research Methodology Cases*, ISBN: 9781526444622, Online Version: DOI: http://dx.doi.org/ 10.4135/ 9781526444622, 2018.

7. Jana, Rabindranath, Maruthakutti, Rangasamy and Choudhuri, Anil K.: Survival Strategy of

Elderly Headed Households of Rural West Bengal: An SNA Approach, *Indian Journal of Gerontology*, **31(2)**, 169-195, 2017.

8. Pal, Manoranjan (ERU), Bharati, Premananda and Bharati, Susmita: Contribution of Different Anthropometric Measures to BMI: Towards Assessing Overweight & Obesity of (6-10 Year) Children In Kolkata, India, *Journal of Life Science*, **9(2**), 88-97, 2017.

9. Rao, P.V. and Behera, H.C.: Agrarian Questions under Neoliberal Economic Policies in India: A Review and Analysis of Dispossession and Depeasantisation, *The Oriental Anthropologist*, **17(1),** 17-42, 2017.

10. Sahoo, D, Shome, S., Pal M. (ERU) and Bharati, P.: Women's Decision Making Autonomy and its Influence on Nutritional Health in India: A North-South Regional Comparison, *Human Biology Review*, **6(4**), 359-375, 2017.

11. Shome, Suparna, Adak, DipakKumar, Pal, Manoranjan (ERU), Hossain, Golam and Bharati, Premananda: Effect of Socio-economic and Demographic Factors on Nutritional Status of Indian Post- adolescent Teenagers: A Set Theoretic Approach, *Journal of Life Science*, **9(1)**, 33-47, Online Version: DOI: 10.1080/09751270.2017.1336016, 2017.

12. Shome, Suparna, Pal, Manoranjan (ERU) and Bharati, Premananda: Influence of Maternal Autonomy and Socioeconomic Factors on Birth Weight of Infants in India, *Malaysian Journal of Nutrition*, **24(1),** 35-46, 2018.

Economics and Planning Unit, Delhi

1. Afridi, Farzana, Vegard, Iversen and Sharan, M.R.: Women Political Leaders, Corruption and Learning: Evidence from a Large Public Program in India, *Economic Development and Cultural Change* (lead article), **66 (1)**, 1-30, 2017.

2. Bhattarai, Dipendra, Somanathan, E. and Nepal, Mani: Are Renewable Energy Subsidies in Nepal Reaching the Poor? *Energy for Sustainable Development*, **43**, 114-122, 2018.

3. Bishnu, Monisankar and Wang, Min: The Political Intergenerational Welfare State, *Journal of Economic Dynamics and Control*, **77**, 93-110, 2017.

4. Ghate, Chetan, Gupta, Sargam and Mallick, Debdulal: Terms of Trade Shocks and Monetary Policy in India, *Computational Economics*, **51(1),** 75-121, 2018.

5. Ghate, Chetan, Sen, Kunal and Kar, Sabyasachi: Book Review for "Political Economy of Growth Episodes". Palgrave Macmillian, *Economic and Political Weekly*, **LIII(10)**, 36-38, 2018.

6. Kapoor, Mudit: Elasticity of Intertemporal Substitution in Consumption in the Presence of Inertia: Empirical Evidence from a Natural Experiment, *Management Science*, **63(12),** 4188-4200, 2017.

7. Kapoor, Mudit: The Impact of Credit Constraints on Exporting Firms: Evidence from the Provision and Subsequent Removal of Subsidized Credit, *World Economy*, **40**, 2854–2874, 2017.

8. Mukhopadhyay, Abhiroop, Amparo, Castelló-Climent and Chaudhry, Latika: Higher Education and Prosperity: From Catholic Missionaries to Luminosity in India, *The Economic Journal*, Online Version: DOI: 10.1111/ecoj.1255, 20171.

Publications

9. Mishra, Debasis and Sharma, Tridib: A simple budget-balanced mechanism, *Social Choice and Welfare*, **50**, 147-170, 2018.

10. Mishra, Debasis, Nath, Swaprava and Roy, Souvik: Separability and Decomposition in Mechanism Design with Transfers, *Games and Economic Behavior*, **109**, 240-261, 2018.

11. Mukhopadhyay, Abhiroop, Batra, Akansha and Gupta, Indrani: Gender Differences in Health Expenditure of Rural Cancer Patients: Evidence from A Public Tertiary Care Facility in India, *Journal of Quantitative Economics*, Online Verssion: https://doi.org/10.1007/s40953-017-0113-4, 2017.

12. Randall, Bluffstone, Somanathan, E., Jha, Prakash, Luintel, Harisharan, Bista, Rajesh, Toman, Michael and Paudel, Naya: Does Collective Action Sequester Carbon? Evidence from the Nepal Community Forestry Program, *World Development*, **101**, 133-141, 2018.

13. Sen, Arunava, Gaurav, Abhishek and Picot, Jérémy: The Decomposition of Strategy-Proof Random Social Choice Functions on Dichotomous Domains, *Journal: Mathematical Social Sciences*, **90**, 28-34, 2017.

14. Yan, Long, Mishra, Debasis and Sharma, Tridib: Balanced Ranking Mechanisms, *Games and Economic Behavior*, **105**, 9-39, 2017.

Economic Analysis Unit, Bangalore

1. Chattopadhyay, M. and Lahiri, A.: Data Anomaly in Mining Statistics of India, *Statistical Journal of the IAOS,* **33**, 547-556, 2017.

2. Chattopadhyay, M.: Workplace Gender Discrimination among Coffee Workers of India, *International Journal of Gender Studies in Developing Societies*, **9(1)**, 77-90, 2017.

3. Ramachandran, V.K.: Economic Planning in Kerala, *Critical Asian Studies*, **50(1),** 155-163, 2018.

4. Swaminathan, Madhura: Crop Incomes in India, *Review of Agrarian Studies*, **7(2),** 1-3, 2017.

5. Swaminathan, Madura, Jayaraman, T. and Kamal, Kumar Murari: Climate Change and Agricultural Suicides in India, *Letters to the National Academy of Sciences (PNAS)*, Online Version: www.pnas.org/cgi/doi/10.1073/pnas.1714747115, 2017.

Statistical Quality Control and Operations Research Division

SQC & OR Unit, Kolkata

1. Ahsanullah, M. and Anis, M.Z.: Some Characterizations of Exponential Distribution, *International Journal of Statistics and Probability,* **6 (5)**, 132-139, 2017.

2. Bhattacharya, R. and Pradhan, B.: Computation of optimum Type-II progressively hybrid censoring schemes using variable neighbourhood search algorithm, *TEST*, **26**, 802-821, 2017.

3. Budhiraja, S. and Pradhan, B.: Computing optimum design parameters of a progressive type I interval censored life test from a cost model, *Applied Stochastic Models in Business and Industry*, **33**, 494-506, 2017.

4. Bhattacharya, R. and Pradhan, B: Bayesian design of life testing plans under hybrid censoring scheme, *Quality and Reliability Engineering International*, **34**, 93-106, 2018.

5. Chatterjee, Moutushi and Chakraborty, Ashis Kumar: Unification of some multivariate process capability indices for asymmetric specification region*, Statistica Neerlandica*, **71(4)**, 286-306, 2017.

6. Chakraborty, Tanujit, Chattopadhyay, Swarup and Chakraborty, AshisKumar: A novel hybridization of classification trees and artificial neural networks for selection of students in a business school*, OPSEARCH*, Online Version: DOI: 10.1007/s12597-017-0329-2, 2018.

7. Dey, S., Sharma, V. K., Anis, M.Z. and Yadav, B.: Assessing lifetime performance index of Weibull distributed products using progressive type II right censored samples, *International Journal of System Assurance and Management,* **8 (2)***,* 318-333, year not mentioned*.*

8. Dey, S., Mazucheli, S. and Anis, M.Z.: Estimation of reliability of multicomponent stress-strength for a Kumaraswamy distribution, *Communications in Statistics-Theory and Methods,* **46(4)**, 1560-1572, 2017.

9. Das, P.: Design of near-optimal irregular fractional plans satisfying multi-optimality criteria, *Journal of Industrial and Production Engineering*, **35**, 1, 41-47, 2017.

10. Deepmala, Das, A.K. and Jana, R.: On existence of coincidence solutions for a generalized system of functional equations, *Gazi University Journal of Science*, **30(4)**, 442-452, 2018.

11. Dasgupta, R., Mukhopadhyay, A. R. and Ghosh, S. K.: Reduction of lead time through curtailment of cycle time of a supplier-a case example, *International Journal of Engineering Trends and Technology*, **54(4)**, 60-78, 2017.

12. Gauri, S.K. and Das, P.: A framework for performance evaluation and monitoring of public health program using composite performance index, *International Journal for Quality Research*, **11(4)**, 817- 834, 2017.

13. Iswarari, S., Das, D., Ghatak, M.M., Gauri, S.K. and Rout, J.K. : Efficacy of ozone neucleoplasty against physiotherapy in cases of chronic discogenic low back pain, *Journal of Medical Science and Clinical Research*, **5(6)**, 23075-23082, 2017.

14. Mollah, A. K., Sadhukhan, S., Das, P. and Anis, M.Z.: A Cost Optimization Model and Solutions for Shelter Allocation and Relief Distribution in Flood Scenario, *International Journal of Disaster Risk Reduction*, Online Version: https://doi.org/10.1016/j.ijdrr.2017.11.018*,* 2017.

15. Pal, S. and Gauri, S.K.: A desirability functions-based approach for simultaneous optimization of quantitative and ordinal response variables in industrial processes, *International Journal of Engineering, Science and Technology*, **10(1)**, 76 - 87, 2018.

16. Roy, S. and Pradhan, B.: Bayesian optimum life testing plans under progressive Type-I interval censoring scheme, *Quality and Reliability Engineering International*, **33**, 2727-2737, 2017.

Publications

17. Roy, S., Gijo E.V. (SQC & OR Bangalore) and Pradhan, B.: Inference based on progressive Type I interval censored data from log-normal distribution, *Communications in Statistics-Simulation and Computation*, **46(8)**, 6495-6512, 2017.

18. Roy, S., Pradhan, B. and Gijo E.V. (SQC & OR Bangalore): Estimation of P(X<Y) for generalized half logistic distribution based on Type-II censored data, *International Journal of Quality and Reliability Management*, **34(7)**, 1111-1122, 2017.

SQC & OR Unit, Bangalore

1. John, Boby, Kadadevaramath, R.S. and Edinbarough, A.I.: Designing software development process to optimize multiple output performance characteristics, *Software Quality Professional*, **19(4)**, 55-66, 2017.

2. Roy, S., Pradhan, B. and Gijo, E.V.: Estimation of P(X<Y) for generalized half logistic distribution based on Type-II censored data, *International Journal of Quality & Reliability Management*, **34(7)**,1111-1122, 2017.

3. Roy, S., Gijo, E.V. and Pradhan, B.: Inference based on progressive Type-I interval censored data from log-normal distribution, *Communications in Statistics - Simulation and Computation*, **46(8)**, 6495-6512, 2017.

SQC & OR Unit, Chennai

1. G. Ravindran, Jun, Fan and Tao, J.: On the structure of the set of Z-transformation on proper cones, *Pacific Journal of Optimization,* **13**, 219-226, 2017.

SQC & OR Unit, Hyderabad

1. Bartl, David and Dubey, Dipti: A discrete variant of Farkas' lemma, *Operations Research Letters*, **45**, 160-163, 2017.

2. Dubey, Dipti, Neogy, S. K. and Ghorui, Debasish: Completely mixed strategies for generalized bimatrix and switching controller stochastic game, *Dynamic Games and Applications,* **7**, 535–554, 2017.

3. Dubey, Dipti and Neogy, S. K.: On generalizations of positive subdefinite matrices and the linear complementarity problem, *Linear and Multilinear Algebra*, Online Version: DOI:10.1080/03081087.2017.1383348, 2017.

4. Mondal, P., Neogy, S. K., Sinha, S. and Ghorui , D.: Completely Mixed Strategies for Two Structured Classes of Semi-Markov Games, Principal Pivot Transform and Its Generalizations, *Applied Mathematics & Optimization*, **76(3)**, 593–619, 2017.

SQC & OR Unit, Pune

1. Moulvi, Aafrinaaz, Minz, Pooja and Asma, Richa: Characterization of Chemical Constituents of Human Sweat: A Study Based on Indian Population, *American Journal Forensic Medicine & Pathology*, Online Version: DOI:.10.1097PAF000000000000388, 2018.

Library, Documentation and Information Sciences Division

Library, Kolkata

1. Das, P.K.: Aspects of Authorship in Journal Special Issues: An experience from DESIDOC Journal of Library and Information Technology, *Journal of Scientometric Research*, **6(3)**, 159-170, ISSN: 2321-6654 (P); 2320-0059(E), Online Version: DOI:10.5530/jscires.6.3.23, 2017.

2. Mandal, TapanKumar: Application of Webometric Tools in Ranking of Management Schools in India, *Vidyasagar University Journal of Library and Information Science*, **22**, 1-8, 2017.

Center for Soft Computing Research, Kolkata

1. Banerjee, R. and Pal S.K.: Data-structures for Multisensory Information Processing in an Embodied Machine-mind, *IEEE Trans. Cognitive and Developmental Systems*, Online Version: DOI: 10.1109/TCDS.2018.2816744.

2. Das, S., Chatterjee, C.: Rain characterization based on maritime and continental origin at a tropical location, *Journal of Atmospheric and Solar-Terrestrial Physics*, Online Version: DOI:10.1016/j.jastp.2018.02.011, 2018.

3. Dey, B. and Kundu, M.K.: Enhanced macroblock features for dynamic background modeling in H.264/AVC video encoded at low-bitrate, *IEEE Transactions on Circuits and Systems for Video Technology*, Online Version: DOI: 10.1109/TCSVT.2016.2614984, 2018..

4. Ghosh A. and S. Bandyopadhyay: Image Co-segmentation Using Dual Active Contours, *Applied Soft Computing*, AISSN 1568-4946, Online Version: https://doi.org/10.1016/j.asoc.2018.02.034, 2018.

5. Kalia, H., Dehuri, S., Ghosh, A. and Cho, S.B.: Surrogate-Assisted Multi-objective Genetic Algorithms for Fuzzy Rule-Based Classification, *International Journal of Fuzzy Systems*, 1-18, 2018.

6. Mondal, A., Misra, S., Patel, L.S., Pal, S.K. and Obaidat, M.S.: DEMANDS: Distributed energy management using non-cooperative scheduling in smart grid, *IEEE Systems*, Online Version: DOI: 10.1109/JSYST.2017.2723961.

7. Pal, J.K., Ray, S.S. and Pal S.K.: Fuzzy mutual information based grouping and new Ffitness function for PSO in selection of miRNAs in cancer, *Computers in Biology and Medicine, (Special issue on Medical Image Processing),* **89**, 540-548, 2017.

8. Paul, A., Mukherjee, A., Das, .A. and Ghosh, K.: Computational intelligence in telecommunication networks: a review, *International Journal of Computational Intelligence Studies*, **6(2/3)**, 189-228, Online Version: https://doi.org/10.1504/IJCISTUDIES.2017. 089053, 2017.

Administrative Division

Central Stores Unit, Kolkata

1. Pal, JadabKumar, Chakraborty, Sonali, tiwari, HareRam and Chandra, Vinod: The working hours of unpaid child workers in the handloom industry in India, *International Social Science Journal*, Wiley Publishers, **LXVI(1/2)**, 197-204, Online Version: DOI: 10.1111/issj.12121, 2017.

Papers Published in Conference Proceedings

Applied Statistics Division

Applied Statistics Unit, Kolkata

1. Karati, Sabyasachi and Sarkar, Palash.: Kummer for Genus One over Prime Order Fields, *Asiacrypt 2017, Part-II*, Lecture Notes in Computer Science, Springer, **10625**, 3-32, 2017.

Applied Statistics Unit, Chennai

1. Deemat, C.M. and Sudheesh, K.K.: A Family of Non-Parametric Tests for Decreasing Mean Time to Failure with Censored Data*, 2nd ISI Regional Statistics Conference*, Bali, Indonesia*,* 20-24, 2017.

Applied and Official Statistics Unit, Tezpur

1. Ghosh R., Ghosh, K., and Maitra, S.: Automatic detection and classification of diabetic retinopathy stages using CNN, *4th International Conference on Signal Processing and Integrated Networks (SPIN)*, Noida, 550-554, Online Version: DOI:10.1109/SPIN.2017.8050011, 2017.

2. Neogi, S., Maitra, S., Chakraborty, T. and Ghosh, K., : Change detection of exposed sandbars around Kaziranga national park, *Third International Conference on Research in Computational Intelligence and Communication Networks (ICRCICN)*, Kolkata, 142-146, Online Version: DOI:10.1109/ICRCICN.2017.8234496, 2017.

Computer and Communications Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata

1. Acharya, A., De, M. and Nandy, S.C.: Range Assignment of Base-Stations Maximizing Coverage Area without Interference, *Proc. Canadian Conf. on Computational Geometry (CCCG),* 126-131, 2017.

2. Acharyya, A., Nandy, S.C., Pandit, S. and Roy S.: Covering Segments with Unit Squares, *Proc. Workshop on Algorithms and Data Structures*, 1-12, 2017.

3. Bhagat, S., Gan Chaudhuri, S and Mukhopadhyaya, K.: Gathering of Opaque Robots in 3D Space, *Proc. International Conference on Distributed Computing and Networking (ICDCN)*, ACM, 2:1-2:10, 2018.

4. Bhagat, S. and Mukhopadhyaya, K: Optimum Algorithm for Mutual Visibility Among Asynchronous Robots with Lights, *Proc. of 19th International Symposium of Stabilization Safety and Security of Distributed Systems (SSS),* **10616,** Lecture Notes in Computer Science (LNCS), 341-355, 2017.

5. Das, A., Ghosh, S.C, Das, N. and Barman, A.D.: Q-Learning Based Co-operative Spectrum Mobility in Cognitive Radio Networks, *2017 IEEE 42nd Conference on Local Computer Networks (LCN)*, Singapore, 502-505, 2017.

6. Das, M., Banerjee, A., Singh, N. and Sardar, B.: Performance Attacks on Branch Predictors in Embedded Processors with SMT Support, *International Conference on Information System Security (ICISS)*, 313-322, 2017.

7. Das, M., Banerjee, A. and Sardar, B.: A Framework for Branch Predictor Selection with Aggregation on Multiple Parameters, *VLSI Design and Test Symposium (VDAT)*, 69-74, 2017.

8. Das, S., Dev, S.R., Sadhukhan, A., Sahoo, U.K. and Sen, S.: Burning Spiders, *The International Conference on Algorithms and Discrete Applied Mathematics (CALDAM)*, 155-163, 2018.

9. Das, S. and Gahlawat, H.: Variations of Cops and Robbers Game on Grids, *The International Conference on Algorithms and Discrete Applied Mathematics (CALDAM)*, 249-259, 2018.

10. Das, S., Nandi, S. and Sen, S.: On Oriented L(p, 1)-labeling, *The International Conference on Algorithms and Discrete Applied Mathematics (CALDAM)*, 274-282, 2018.

11. Das, S., Nandy, A. and Sarvottamananda, S.: Radius, Diameter, Incenter, Circumcenter, Width and Minimum Enclosing Cylinder for Some Polyhedral Distance Functions, *The International Conference on Algorithms and Discrete Applied Mathematics (CALDAM)*, 283-300, 2018.

12. Ghosh, S. and Ghosh, S.C.: A predictive handoff mechanism for 5G ultra dense networks, *Proc. of the 16th IEEE International Symposium on Network Computing and Applications (NCA)*, 473-477, 2017.

13. Kaplan, H., Roy, S. and Sharir, M.: Finding Axis-Parallel Rectangle of Fixed Perimeter or Area Containing Largest Number of Points, *Proc. European Symp. on Algorithms*, 52.1-52.13, 2017.

14. Kundu, S., Das, N. and Saha, D.: Boundary detection and area estimation of an event region in wireless sensor networks using digital-circles, *Workshop Program of the 19th International Conference on Distributed Computing and Networking (ICDCN'18)*, ACM, Article No. 21, Varanasi, 2018.

15. Majumdar, R., Ghosh, S. and Sur-Kolay, S.: A Method to Reduce Resources for Quantum Error Correction, *Proc. of the 9th Conference on Reversible Computation*, 151-161, 2017.

16. Nandy, S.C., Pandit, S. and Roy, S: Covering Points: Minimizing the Maximum Depth, *Proc. Canadian Conf. on Computational Geometry (CCCG)*, 37-42, 2017.

17. Paul, S., Banerjee, P. and Sur-Kolay, S.: Post-Layout Perturbation towards Stitch Friendly Layout for Multiple E-Beam Lithography, *Proc. of the 35th IEEE International Conference on Computer Design*, Boston, USA, 411-414, 2017.

18. Sadhu, S., Roy, S., Nandy, S.C. and Roy, S.: Optimal Covering and Hitting of Line Segments by Two Axis-Parallel Squares, *Proc. Int. Conf. on Combinatorics and Computing (COCOON)*, 457-468, 2017.

19. Sadhu, S., Roy, S., Nandi, S., Nandy, S.C. and Roy S.: Computing the Triangle Maximizing the Length of Its Smallest Side Inside a Convex Polygon, *Proc. Int. Conf. on Computational Science and Applications*, 509-524, 2017.

20. Singh, D. and Ghosh, S.C.: A distributed algorithm for D2D communication in 5G using

stochastic model, *16th IEEE International Symposium on Network Computing and Applications (NCA)*, 459-466, 2017.

Computer Vision and Pattern Recognition Unit, Kolkata

1. Alaei, Fahimeh, Alaei, Alireza, Pal, Umapada and Blumenstein, Michael: Fast Local Binary Pattern: Application to Document Image Retrieval, *IVCNZ*, Online Version: https://ieeexplore.ieee.org/abstract/document/8402464, 2017.

2. Andrew, Chris, Reddy, Santhoshini, Pulabaigari, Viswanath and Pal, Umapada: Text Independent Writer Identification for Telugu Script using Directional Filter based Features, *ICDAR-2017 Workshop on Machien Learning*, Japan, 65-70, 2017.

3. Bhattacharya, Nilanjana, Pal, Umapada and Roy, Partha Pratim: Stroke-order Normalization for Online Bangla Handwriting Recognition, *The 14th IAPR International Conference on Document Analysis and Recognition (ICDAR2017)*, Japan, 206-211, 2017.

4. Biswas, B., Bhattacharya, U. and Chaudhuri, B.B.: A Robust Scheme for Extraction of Text Lines from Handwritten Documents, *International Conference on Computer Vision and Image Processing*, Advances in Intelligent Systems and Computing, **460**, Springer, Singapore, 107-116, 2017.

5. Chakrabarty, Abhisek, Pandit, Onkar Arun and Garain, Utpal: Context Sensitive Lemmatization Using Two Successive Bidirectional Gated Recurrent Networks, *55th Annual Meeting of the Association for Computational Linguistics (ACL)*, Canada, 1481-1491, 2017.

6. Chakrabarty, Abhisek and Garain, Utpal: ISI at the SIGMORPHON 2017 Shared Task on Morphological Reinflection, *CoNLL Shared Task*, Vancouver, Canada, 66-70, 2017.

7. Das, Arjun, Garain, Utpal, Kumar, Ravindra and Senapati, Apurbalal: Hiencor: On mining of a hi-en general purpose parallel corpus from the web, *International Conference on Asian Language Processing (IALP)*, Singapore, 235-238, 2017.

8. Dey, Sounak, Dutta, Anjan, Llados, Josep, Fornes, Alicia and Pal, Umapada: Shallow Neural Network Model for Hand-drawn Symbol Recognition in Multi-Writer Scenario, *ICDAR-2017 Workshop on Grapgics Recognition*, Japan, 31-32, 2017.

9. Dey, Sounak, Dutta, Anjan, Llad´os, Josep and Pal, Umapada: Bringing back Hieroglyph, *ICDAR-2017 Workshop on Graphics Recognition*, Japan, 33-34, 2017.

10. Das, Abhijit, Pal, Umapada, Ferrer, Miguel A. and Blumenstein, Michael: A decision-level fusion strategy for multimodal ocular biometric in visible spectrum based on posterior probability, *IJCB*, 794-798, 2017.

11. Garain, Utpal, Pandit, OnkarArun, Augereau, Olivier, Okoso, Ayano and Kise, Koichi: Identification of Reader Specific Difficult Words by Analyzing Eye Gaze and Document Content, *14th IAPR International Conference on Document Analysis and Recognition (ICDAR)*, Kyoto, Japan, 1346-1351, 2017.

12. Gauraha, Niharika , Pavlenko, Tatyana and Parui, Swapan K.: Post Lasso Stability Selection for High Dimensional Linear Models**,** *6th International Conference on Pattern Recognition Applications and Methods 2017*, Porto, Portugal, 638-646, 2017.

13. Gauraha, Niharika and Parui, Swapan K.: Pre-Selection in Cluster Lasso Methods for Correlated Variable Selection in High-Dimensional Linear Models**,** *6th Workshop on Dynamics of Knowledge and Belief*, DKB/KIK@KI 2017, TU Dortmund, 43-55, 2017.

14. Gauraha, Niharika and Parui, Swapan K.: A New Combined Approach for Inference in High-Dimensional Regression Models with Correlated Variables**,** *6th Workshop on Dynamics of Knowledge and Belief*, DKB/KIK@KI 2017, TU Dortmund, 56-63, 2017.

15. Mukherjee, Partha Sarathi , Chakraborty, Bappaditya , Bhattacharya, Ujjwal and Parui, Swapan Kumar: A Hybrid Model for End to End Online Handwriting Recognition, *14th IAPR International Conference on Document Analysis and Recognition (ICDAR 2017)*, Japan, 658-663, 2017.

16. Nayef, Nibal, Yin, Fei, Bizid, Imen, Choi, Hyunsoo, Feng, Yuan, Karatzas, Dimosthenis, Luo, Zhenbo, Pal ,Umapada, Rigaud, Christophe, Chazalon, Joseph, Khlif, Wafa, Luqman, Muhammad Muzzamil, Burie, Jean-Christophe, Liu, Cheng-lin and Ogier, Jean-Marc: ICDAR2017 Robust Reading Challenge on Multi-lingual Scene Text Detection and Script Identification – RRC-MLT, *The 14th IAPR International Conference on Document Analysis and Recognition (ICDAR2017)*, Japan, 1454-1459, 2017.

17. Roy, Sangheeta, Palaiahnakote, Shivakumara, Pal, Umapada, Lu, Tong and Wahab, Wahid Bin Abdul:Temporal Integration for Word-Wise Caption and Scene Text Identification, *The 14th IAPR International Conference on Document Analysis and Recognition (ICDAR2017)*, Japan, 350-355, 2017.

18. Roy, Sangheeta, Shivakumara, Palaiahnakote, Jain, Namita, Khare, Vijeta, Pal, Umapada and Lu, Tong: New Fuzz-Mass Features for Video Type Categorization, *The 14th IAPR International Conference on Document Analysis and Recognition (ICDAR2017)*, Japan, 833-843, 2017.

19. Raghunandan, K.S., Shivakumara, Palaiahnakote, Kumar, G. Hemantha, Pal, Umapada and Lu, Tong: Sharpness and Contrast based Features for Word-Wise Video Type Classification, *The 4th Asian Conference on Pattern Recognition (ACPR-2017)*, China, 103-108, 2017.

20. Reddy, Santhoshini, Andrew, Chris, Pal, Umapada, Alaei, Alireza and Pulabaigari, Viswanath: Writer Identification in Indic Scripts: A Stroke Distribution based Approach, *The 4th Asian Conference on Pattern Recognition (ACPR-2017)*, China, 947-952, 2017.

21. Saini, Rajkumar, Kumar, Pradeep, Dutta, Saikat, Roy, Partha Pratim and Pal, Umapada: Local Behavior Analysis for Trajectory Classification using Graph Embedding, *The 4th Asian Conference on Pattern Recognition (ACPR-2017)*, China, 442-447, 2017.

22. Shivakumara, Palaiahnakote, Konwer, Aishik, Bhowmick, Abir, Khare, Vijeta, Pal, Umapada and Lu, Tong: A New GVF Arrow Pattern for Character Segmentation from Double Line License Plate Images, *The 4th Asian Conference on Pattern Recognition (ACPR-2017)*, China, 782-787, 2017.

23. Sarkar, Dipabali *and Palit, Sarbani*: Blind Determination of Quality of JPEG Compressed Images, *10th International Symposium on Image and Signal Processing and Analysis (ISPA 2017)*, Slovenia, 159-164*,* 2017.

24. Sharma, Nabin, Sengupta, Abira, Sharma, Rabi, Pal, Umapada and Blumenstein, Michael: Pincode detection using Deep CNN for Postal Automation, *IVCNZ*, Online Version: https://ieeexplore.ieee.org/abstract/document/84025, 2017.

25. Wang, Zhen, Palaiahnakote, Shivakumara, Lu, Tong, Basavanna, Mahadevappa, Pal, Umapada and Blumenstein, Michael: Fourier-Residual for Printer Identification, *The 14th IAPR International Conference on Document Analysis and Recognition (ICDAR2017)*, Japan, 1114-1119, 2017.

Electronics and Communication Sciences Unit, Kolkata

1. Ghosh, A., Das, S., Panigrahi, B.K. and Das, A.K.: A noise resilient Differential Evolution with improved parameter and strategy control, *IEEE Congress on Evolutionary Computation (CEC)*, San Sebastian, Spain, 2590-2597, 2017.

2. Jana, N.D., Sil, J. and Das, S.: Protein Structure Optimization in 3D AB off-lattice model using Biogeography Based Optimization with Chaotic Mutation, *ACM CODS*, India, 2017.

3. Montes, Ignacio, Montes, S. and Pal, N.R.: On the Use of Divergences for Defining Entropiesfor Atanassov Intuitionistic Fuzzy Sets, *Advances in Fuzzy Logic and Technology* 2017, Springer, Cham, 554-565, 2017.

4. Panda, A., Mallipeddi, R. and Das, S.: Particle swarm optimization with a modified learning strategy and blending crossover, *IEEE SSCI 2017*, USA, 1 - 8, 2017.

5. Roy, S.K., Chanda, B., Chaudhuri, B.B., Ghosh, D.K. and Dubey, S.R.: A Complete Dual-Cross Pattern for Unconstrained Texture Classification, *4th IAPR Asian Conference on Pattern Recognition, IEEE*, China, 741 -746, 2017.

6. Santra, B., Mukherjee, D.P. and Chakrabarti, D.: A Non-Invasive Approach for Estimation of Hemoglobin Analyzing Blood Flow in Palm, *International Symposium on Biomedical Imaging (ISBI)*, IEEE, Australia, 1100-1103, 2017.

Machine Intelligence Unit, Kolkata

1. Alyafi, A.A., Pal, M., Ploix, S., Reignier, P. and Bandyopadhyay, S.: Differential Explanations for Energy Management in Buildings, *IEEE Technically Sponsored SAI Computing Conference*, London, UK, 507-516, Online Version: DOI: 10.1109/SAI.2017.8252144, 2017.

2. Banerjee, S, Mitra, S, and Uma Shankar, B: Synergetic neuro-fuzzy feature selection and classification of brain tumors, *Proc. IEEE International Conference on Fuzzy Systems (FUZZ IEEE 2017)*, IEEE, Naples, Italy, 1-6, Online Version: DOI: 10.1109/FUZZ-IEEE.2017.8015514, https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8015514&isnumber=8015374, 2017.

3. Chakraborty, A., and Bandyopadhyay, S.: Ultrafast Genomic Database Search using Layered Locality Sensitive Hashing, *Fifth International Conference on Emerging Applications of Information Technology (EAIT)*, Online version: DOI: 10.1109/EAIT.2018.8470442, 2018.

4. Dasgupta, A., Nayak, L., Das, R., Basu, D., Chandra, P. and De, R.K.: Feature selection and fuzzy rule mining for epileptic patients from clinical EEG data, *7th International Conference*

on Pattern Recognition and Machine Intelligence (PreMI'17), Kolkata, 87-95, Online Version: https://doi.org/10.1007/978-3-319-69900-4_11, 2017.

5. Ghosh, R., Maitra, S. and Ghosh, K.: Automatic detection and classification of diabetic retinopathy stages using CNN, *4th International Conference on Signal Processing and Integrated Networks (SPIN),* IEEE Proceedings, 550-554, Online Version: DOI: 10.1109/ SPIN.2017.8050011, 2017.

6. Khan, A. and Maji, P.: Subspace Updation for Integrative Clustering of Multimodal Omics Data, *3rd International Conference on Computational Intelligence and Networks (CINE 2017*), Bhubaneswar, 99-104, 2017.

7. Law, A., Chakraborty, K. and Ghosh, A.: Functional Link Artificial Neural Network for Multi-label Classification, *International Conference on Mining Intelligence and Knowledge Exploration*, Springer, Cham, 1-10, 2017.

8. Maji, P.: Advances in Rough Set Based Hybrid Approaches for Medical Image Analysis, *International Joint Conference on Rough Sets (IJCRS2017*), Olsztyn, Poland, 25-33, 2017.

9. Mandal, A. and Maji, P.: Staining Pattern Recognition of HEp-2 Cell Images Using Supervised Canonical Correlation Analysis, *5th International Conference on Emerging Applications of Information Technology (EAIT2018),* Kolkata, 1-4, 2018.

10. Mandal, A. and Maji, P.: A New Method to Address Singularity Problem in Multimodal Data Analysis, *7th International Conference on Pattern Recognition and Machine Intelligence (PReMI2017*), Kolkata, 43-51, 2017.

11. Mandal, A. and Maji, P.: Regularization and Shrinkage in Rough Set Based Canonical Correlation Analysis, *International Joint Conference on Rough Sets (IJCRS2017*), Olsztyn, Poland, 432-446, 2017.

12. Neogi, S., Maitra, S., Chakraborty, T. and Ghosh, K.: Change detection of exposed sandbars around Kaziranga national park,*Third International Conference on Research in Computational Intelligence and Communication Networks (ICRCICN)*, IEEE Proceedings,142-146, Online Vesion: DOI: 10.1109/ICRCICN.2017.8234496, 2017.

13. Pal, M., Sengupta, R., Bandyopadhyay, S., Alyafi, A.A., Ploix, S., Reignier P. and Saha, S. :Analysis of Optimizers to Regulate Occupant's Actions for Building Energy Management, *9th International Conference on Advances in Pattern Recognition (ICAPR-2017)*, India, 1-6, Online Version: URL: https://hal.a& Vol. No. rchives-ouvertes.fr/hal-01675162/, 2017.

14. Phophalia, A. and Maji, P.: Multimodal Brain Tumor Segmentation Using Ensemble of Forest Method, Brain Lesion (BrainLes2017), *Workshop: International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI2017),* Quebec City, Canada, 159-168, 2017.

15. Roy, R., Ghosh, S., Cho, S.B. and Ghosh, A.: Despeckling with Structure Preservation in Clinical Ultrasound Images Using Historical Edge Information Weighted Regularizer, *International Conference on Mining Intelligence and Knowledge Exploration*, Springer, Cham, 144-155, 2017.

16. Shah, E. and Maji, P.: Rough Hypercuboid and Modified Kulczynski Coefficient for Disease Gene Identification, *9th Asian Conference on Intelligent Information and Database Systems (ACIIDS2017*), Kanazawa, Japan, 465-474, 2017.

Publications

Documentation, Research and Training Centre, Bangalore

1. Dutta, B., Toulet, A., Emonet, V. and Jonquet, C.: New Generation Metadata vocabulary for Ontology Description and Publication, *11th Metadata and Semantics Research Conference (MTSR 2017)*, **755**, Communications in Computer and Information Science (CCIS), Tallinn, Estonia, 173-185, Online Version: DOI: https://doi.org/10.1007/978-3-319-70863-8, 2017.

2. Krishnamurthy, M and Sajana, C.: Current Trends and Progress of Institutional Repositories in BRICS Countries, *20th International Symposium on Electronic Theses and Dissertations*, Washington DC, USA, Online Version: http://www.ocs.usetda.org/index.php/NDLTD/ETD2017/paper/viewFile/70/50, 2017.

3. Meeramani, N, Krishnamurthy, M and Asundi, Ashok: Compatibility Study on Emerging Technologies and Library and Information Services – A SWOT Analysis, *5th Biennial Indian Academy of Management Conference,* Indian Insights: Integrating Individuals, Institutions and innovations, Indore, Online Version: https://www.iimidr.ac.in/news-events/indam-conference-2017-concludes-at-iim-indore/, 2017.

4. Namtirtha, A., Dutta, A. and Dutta, B.: Weighted kshell degree neighborhood method: an approach independent of completeness of global network structure for identifying the influential spreaders, *10th International Conference on COMunication Systems and NETworks (COMSNETS)*, Bangalore, Online Version: DOI: https://doi.org/10.1109/COMSNETS.2018.8328183, 2018.

5. Prasad, A.R.D., Giunchiglia, F. and Madalli, P.: DERA: from document-centric to entity-centric knowledge modelling, Faceted classification today: theory, technology and end users, *International UDC Seminar*, London, UK, 169-180, ISBN 978-3-95650-269-9, 2017.

6. Prakash and Krishnamurthy, M.: Knowledge competencies among Health Sciences Librarianship in Karnataka, *International conference on Libraries Beyond Borders: Innovative Trends, Issues and Challenges in Knowledge Dissemination*, Ramesh Babu and Joyson Sondarrurajan (eds.), Department of Library Services Christian Medical College, Vellore ,Tamil Nadu, 57-64, ISBN 978-93-81992-38-8, 2017.

7. Prakash and Krishnamurthy, M**:** Knowledge Management in Health Science Librarianship, *International Conference on Future of Libraries: From Promises to Practice,* M.Krishnamurthy, Ramesha and Subhash Reddy (eds), ISBN 978-81-92179-79-7, 54-59, 2017.

8. Sajana, C and Krishnamurthy, M.: Open Science and Open Data in Digitally Progressing India *International Conference on Future of Libraries: From Promises to Practice*, M.Krishnamurthy, Ramesha and Subhash Reddy (eds), ISBN 978-81-92179-79-7, 189-196, 2017

Systems Science and Informatics Unit, Bangalore

1. Arun, D., Kumari, K.P. and Meher, S.K.: Dynamic Granular Neural Networks For Remote Sensing Image Classification, *IEEE International Geoscience and Remote Sensing Symposium (IGARSS-2017),* Fort Worth, Texas, USA, 308-371, Online Version: DOI: 10.1109/IGARSS.2017.8127804, 2017.

2. Challa, A., Danda, S., Sagar, B.S.D. and Najman, L.: An Introduction to Gamma-Convergence for Spectral Clustering, *DGCI 2017*, Lecture Notes in Computer Science (LNCS), **10502,** 12, Online Version: DOI: 10.1007/978-3-319-66272-5_16, 2017.

Computer Science Unit, Chennai

1. Babu, Jasine, Basavaraju, Manu, Chandran, L., Sunil and Francis, Mathew C.: On Induced Colourful Paths in Triangle-Free Graphs, *European Conference on Combinatorics, Graph Theory and Applications (EuroComb 2017)*, Electronic Notes in Discrete Mathematics, **61**, 69-75**,** 2017.

2. Francis, Mathew C. and Gonçalves, Daniel: Dushnik-Miller Dimension of Contact Systems of *d*-dimensional Boxes, *European Conference on Combinatorics, Graph Theory and Applications (EuroComb 2017)*, Electronic Notes in Discrete Mathematics, **61**, 467-473**,** 2017.

3. Ghosh, S., Heifetz, A., Verbrugge, R. and Weerd, H. de: What drives people's choices in turn-taking games, if not game-theoretic rationality?, *Theoretical Aspects of Rationality and Knowledge (TARK 2017)*, Electronic Proceedings in Theoretical Computer Science (EPTCS), **251**, Liverpool, UK, 265 - 284, 2017.

Cryptology and Security Research Unit, Kolkata

1. Chakraborty, S., Paul, G. and Pandu Rangan, C.: Efficient Compilers for After-the-Fact Leakage. From CPA to CCA-2 Secure PKE to AKE. *ACISP*, **1**, 343-362**,** 2017.

2. Ghosh, S. and Ruj, S.: Fast Real-Time Authentication Scheme for Smart Grids, *ACM Mobihoc Workshop IoTSEC'17*, Chennai, India, Online Version: https://ieeexplore.ieee.org/document /8384089, 2017.

3. Ghose, S. and Ruj, S.: Secrecy Performance Analysis of Relay Selection in Adaptive DF Relaying Network with Active Adversary, *IEEE ANTS*, Bhubaneswar, India, Online Version: https://ieeexplore.ieee.org/document /8384089, 2017.

4. Paul, G., Chattopadhyay, A. and Chandak, C.: Designing Parity Preserving Reversible Circuits, *RC 2017*, 77-89, 2017.

5. Singh, A., Sengupta, B. and Ruj, S.: Certificate Transparency with Enhancements and Short Proofs, *ACISP*, Auckland, NZ, 381-389, 2017.

6. Tahir, S., Ruj, S. and Muttukrishnan, R.: An Efficient Disjunctive Query enabled Ranked Searchable Encryption Scheme, *IEEE Trustcom*, Sydney, Australia, 425-432, 2017.

Physics and Earth Sciences Division

Geological Studies Unit, Kolkata

1. Chakravorti, S., and Sengupta, D.P.: Shape analysis of extinct amphibian skulls using R Second, *National Geo-Research Scholars Meet*, **abstract Volume**, **54**, Wadia Institute of Himalayan Geology, Dehradun, No Page no. & Vol No. OR Details info of Online Version-?, 2017

2. Deb, SarbaniPatranobis: Sedimentological record, sea-level changes, and their global tectonic connections: evidences from the Proterozoic cratonic basins of peninsular India, *Abstract to Gondwana 16th International Conference*, Bangkok, Thailand, **Abstract Volume**, 111, Online Version: https://sites.google.com/site/16thpuzzlingoutgondwana/home, 2017.

Publications

3. Ghosh, P.: Cryptic signals of the Late Triassic freshwater carbonate depositional environments in a continental rift basin, *33rd International Meeting of Sedimentology-Toulouse,* **Abstract Volume**, 348, Online Version: https://ims2017.sciencesconf.org/data/IMS_2017_Abstracts_ book.pdf, 2017.

4. Ghosh, P. and Dasgupta, S.: The Stable Isotopic Composition of The Freshwater Microbialites Of The Late Triassic Maleri Formation, India, *33rd International Meeting of Sedimentology 2017 - Toulouse*, **Abstract Volume**, 347, Online Version: https://ims2017.sciencesconf.org/ data/IMS_2017_Abstracts_book.pdf, 2017.

Social Sciences Division

Economic Research Unit, Kolkata

1. Bharati, S. (SRU), Pal, M. and Bharati, P.: Childhood Obesity in Kolkata, India: Its Trend and Consequences, *International Conference on Bioinformatics and Biostatistics for Agriculture Health and Environment,* Dhaka, 113-121, 2017.

2. Pal, M., Bharati, P. and Bharati, S. (SRU): Comparing Methods for Assessing Overweight and Obesity of (6-10) Year Children in Kolkata, India, *International Conference on Bioinformatics and Biostatistics for Agriculture Health and Environment,* Dhaka, 122-130, 2017.

Linguistic Research Unit, Kolkata

1. Aman, Atul, Dash, NiladriSekhar and Chakraborty, Jayshree: A Sociolinguistic outline of Khortha, *4th National Language Conference (4NLC-2017),* National Institute of Science and Technology, Berhampur, Online Version: http://languageconference.in/page/programme, 2017.

2. Das, Bishwa Ranjan, Maringanti, HimaBindu, and Dash, NiladriSekhar: Developing a Transliteration System from English to Odia by using a Statistical Method, *4th National Language Conference (4NLC-2017)*, National Institute of Science & Technology, Berhampur, Online Version: http://languageconference.in/page/programme, 2017.

3. Dash, NiladriSekhar and Chakraborty, Arpita: Extraction and Processing of Web-Based News Text Data to Create a Structured Corpus of Indian English, *23rd Himalayan Languages Symposium (HLS-23),* Department of English and Foreign Languages, School of Humanities & Social Sciences, Tezpur, 11-12, 2017.

4. Dash, NiladriSekhar: Decomposing Bangla Verbs as Decontextualized Autonomous Lexical Units for Multi-Domain Applications, *23rd Himalayan Languages Symposium (HLS-23),* Department of English and Foreign Languages, School of Humanities & Social Sciences, Tezpur, 42 , 2017

5. Dhar, Ankita, Dash, NiladriSekhar and Roy, Kaushik: Application of TF-IDF Feature for Categorizing Documents of Online Bangla Web Text Corpus, *6th International Conference on Frontiers of Intelligent Computing: Theory and applications (FICTA 2017),* Bhubaneswar, 31-40, 2017.

6. Dhar, Ankita, Dash, NiladriSekhar and Roy, Kaushik: Categorization of Bangla Web Text Documents based on TF-IDF-ICF Text Analysis Scheme, *52nd Annual Convention of Computer Society of India (CSI 2017),* Kolkata, **CCIS 836**, 477-484, 2018.

7. Dhar, Ankita, Dash, NiladriSekhar and Roy, Kaushik: Classification of Text Documents Through Distance Measurement: An Experiment with Multi-Domain Bangla Text Documents, *IEEE International Conference on Advances in Computing, Communication and Automation (ICACCA-2017),* Dehradun, 21-26, 2017.

Economics and Planning Unit, Delhi

1. Rajashekara, H.M., Nagajothi, K., Sanda, AshokVardhan and DayaSagar, B.S.: Categorization of hierarchically partitioned Waterbody-spread via Moran's Index, *IEEE International Geoscience and Remote Sensing Symposium*, Texas, USA, 4518-4521, Online Version: DOI: 10.1109/ IGARSS.2017.8128265, 2017.

Statistical Quality Control and Operations Research Division

SQC & OR Unit, Bangalore

1. John, Boby: Improving the recruitment process quality using predictive modelling, *14th Annual Conference of Indian Society for Quality*, Online Version: http://www.isqconference.org/wp-content/uploads/2018/01/12Paper_BobyJohn_Improving-the-Recruitment-Process-using-Predictive-Modeling.pdf , 2017.

Library, Documentation and Information Sciences Division

Library, Kolkata

1. Mandal, TapanKumar: Unification of Gold and Green Open Access Resources in the domain of Mathematics and Statistics, *33rd Annual Convention of the Society for Information Science & Conference on Open Access: The Road to Freedom*, Knowledge Resource Centre (Library), CSIR-IICB, Kolkata, 41, 2017.

2. Pal, J.K., Das, P.K. and Das, S.: Paradigm shift of institutional ownership to Open Access Repositories in an Indian Context, *33rd Annual Convention of the Society for Information Science & Conference on Open Access: The Road to Freedom*, Knowledge Resource Centre (Library), CSIR-IICB, Kolkata, 43-44, 2017.

Center for Soft Computing Research: A National Facility, Kolkata

1. Bandyopadhyay, S.: Object of Interest Detection in Video Sequence using Co-segmentation: A New Era in Video Surveillance, *4th IEEE International Conference on Recent Advances In Information Technology (RAIT)*, 188-193, 2018.

2. Chandran, K.S., Banerjee, S. and Ghosh, K.: A Study onCrossmodal Correspondence in Sensory Pathways through Forced ChoiceTask and Frequency Based Correlation in Sound-Symbolism, *5th International Conference on Mining Intelligence and Knowledge Exploration (MIKE 2017)*, Lecture Notes in Computer Science, **10682,** Springer, Hyderabad, 212-220, 2017, ISBN 978-3-319-71927, Online Version: https://doi.org/10.1007/978-3-319-71928-3_21, 2017.

3. Mukherjee, A., Roy, R., Paul, A. and Ghosh, K.: Blind spot filling in from retino-cortical perspectives based on colour and texture, *35th Annual Meeting of Indian Academy of Neuroscience,* 88-89, 2017.

Papers Published in Books

Theoretical Statistics and Mathematics Division

Stat-Math Unit, Delhi

1. Dewan, Isha and Nimbalkar, UttaraNaik: On Competing Risks with Masked Failures, *Mathematical and Statistical Applications in Life Sciences and Engineering*, Adhikari. A., Adhikari, M.R. and Chaubey, Y.P. (eds), Springer, Singapore, 257-281, 2017.

Applied Statistics Division

Interdisciplinary Statistical Research Unit, Kolkata

1. Chatterjee, A., and Das, K.: State Estimation and Anomaly Detection in Wireless Sensor Networks, *Emerging Wireless Communications & Network Technologies*, Arya K., Bhadoria R., Chaudhari N. (eds), Springer, 317-334, Online Version: https://doi.org/ 10.1007/978-981-13-0396-8_16, 2018.

Applied and Official Statistics Unit, Tezpur

1. Magnusson, Hanson L.L., Hyde, M., Chungkham, H.S. and Westerlund, H.: Work Stress and Health: Theories and Models, *Work and Health in India*, Hyde M., Chungkham H.S., Ladusingh L (eds), Policy Press, University of Bristol, UK, 20-45, 2017.

Computer and Communications Sciences Division

Machine Intelligence Unit, Kolkata

1. Bhattacharyya, M. and Bandyopadhyay, S.: Involvement of MicroRNAs in Alzheimer's Disease, *MicroRNA: Perspectives in Health and Diseases*, J. Paul, and R. Muthuswami (eds.), CRC Press, 97-112, 2018.

2. Pal, M. and Bandyopadhyay, S.: Exploration of Many-Objective Feature Selection for Recognition of Motor Imagery Tasks, Progress in Intelligent Computing Techniques: Theory, Practice, and Applications, *Advances in Intelligent Systems and Computing*, P. Sa, M. Sahoo, M. Murugappan, Y. Wu and B. Majhi (eds.), 719, Springer, Singapore, 331-337, Online Version: DOI: 10.1007/978-981- 10-3376- 6_36, 2017.

Systems Science and Informatics Unit, Bangalore

1. Sagar, B.S.D.: Mathematical Morphology in Geosciences and GISci: An Illustrative Review, *Handbook of Mathematical Geosciences*, B. S. D. Sagar, Q. Cheng and F. Agterberg (eds.), Springer, Online Version: DOI: 10.1007/978-3-319-78999-6_35, 2018.

Biological Sciences Division

Biological Anthropology Unit, Kolkata

1. Mukhopadhyay, B. and Sarkar, S.: Lifestyle correlates of metabolic syndrome among a tribal population inhabiting Siikim, India, *Anthropology in North East India,* S. Sengupta (ed.), Gyan Publishing House, New Delhi, 261-273, 2018.

Social Sciences Division

Economic Research Unit, Kolkata

1. Chakravarty, Satya R. and Chattopadhyay, Nachiketa: Multidimensional Poverty and Material Deprivation: Theoretical Approaches, *Handbook of Research on Economic and Social Well-being*, Conchita D'Ambrosio (ed.), Edward Elgar, Cheltenham, 153-170, 2018.

2. Dasgupta, I.: Linguistic Assimilation and Ethno-religious Conflict, *The Theory of Externalities and Public Goods: Essays in Memory of Richard C. Cornes*, W. Buchholtz and D. Ruebbelke (eds.), Springer International Publishing, Berlin, 219-242, 2017.

3. Sharma Biswas, C.: Women Empowerment in India, *Women's Entrepreneurship and Microfinance*, C. Neogi, A. Kumar Bhandari and S. Ghosh (eds.), Springer, 3-16, 2018.

4. Srivastava, M., Roy, P., Bharati, S., Pal, M. and Bharati, P.: Association of Nutritional Status and Drinking Water Among the Children of North East India, *Issues on Health and Healthcare in India: Focus on the North Eastern Region,* Utpal Kumar De, Manoranjan Pal and Premananda Bharati (eds.), Springer, **26**, 459-465, 2018.

Linguistic Research Unit, Kolkata

1. Dasgupta, Probal: Rethinking free speech, *Ways with Language: A Festschrift in honour of Prof. Udaya Narayana Singh*, Shailendra Kumar Singh, Kavita Rastogi, Prasannanshu, Arimardan Kumar Tripathi, Jayati Chatterjee (eds.), Lakshi, New Delhi, 3-5, 2017.

2. Dasgupta, Probal: Between temples and templates: history's claims on the translator, *Reflections on Translation and the Ancient Indian Literature*, Mau Das Gupta, Satyajit Layek (eds.), Saptarshi, Kolkata, 106-121, 2017.

3. Dasgupta, Probal: Ain pravaasaat 'vaagh' badaltaanaa [tr. Renuka Ozarkar], *Bahubhaashiktaa: Gunvattaapuurna Shikshanaachaa Paayaa*, Avinash Pandey, Vinaya Malati Hari (eds.), Unique Academy, Pune, 184-201, 2017.

Publications

4. Dasgupta, Probal: Du problemoj en la sintakso de Esperanto, *Aliroj al Esperanto*, Christer Oscar Kiselman, Renato Corsetti, Probal Dasgupta (eds.), Kava-Pech, Dobřichovice, 65-77, 2018.

Psychology Research Unit, Kolkata

1. De, Partha: Inequalities in Child Survival in Eight Northeastern States of India, *Issues on Health and Healthcare in India: India Studies in Business and Economics*, U. De, M. Pal and P. Bharati (eds.), Springer, Singapore, 319-337, ISBN 978-981-10-6103-5, Online Version: DOI https:// doi.org/ 10.1007/978-981-10-6104-2018, 2018.

2. De, Partha: Maternal Mortality and Associated Risk Factors: A Study in Kolkata Metropolitan Area of West Bengal, India, *Social Problems in India*, B.N. Ghosh and H.S. Ghosh (eds.), Concept Publishing Company (P) Ltd. (India), New Delhi, 100-122, ISBN-13: 978-93-86682-02-4, 2017.

Sociogical Research Unit, Kolkata

1. Ghosh, B.N and Chakraborty, Sujata: Education & Identity: A Case Study of a Santal village of West Bengal, *Social Problems in India*, Bhola Nath Ghosh and Himansu Ghosh (eds.), Concept Publishing Company, New Delhi, Pages 266+xix, ISBN -13:978-93-86682-02-4, 2017.

2. Ghosh, B.N.: Changing status of Khasi (Tribe): An Experiences of Rural Meghalaya, *Human Development and Sustainability Challenges and Strategies,* Asok Kumar Sarkar and Prasanta Kumar Ghosh (eds.), Atlantic Publishers & Distributors (P) Ltd., New Delhi, 127-141, 2017.

Economics and Planning Unit, Delhi

1. Mukhopadhyay, Abhiroop and Chandrasekhar, S.: The Changing Nature of Rurality: Reframing the Discourse on Migration and Commuting, *Structural Transformation and Dynamics of Labour Mobility*, D. Narasimha Reddy and Kailash Sarap (eds.), Palgrave Macmillan, Singapore, 183-207, Online Version: https://doi.org/10.1007/978-981-10-5628-4, 2017.

2. Mukhopadhyay, Abhiroop: Human Capital and the Economy: Where are the Tertiary Educated*? India Development Report*, S. Mahendra Dev (ed.), Oxford University Press, Oxford University Press (India Online Version: https://global.oup.com/academic/product/india-development-report-2017-9780199483549?lang=en&cc=au, 2017.

3. Ray, Tridip and Gulati, Namrata: Inequality and Neighbourhood Effects: Market Access and Welfare of the Poor, *Markets, Governance, and Institutions in the Process of Economic Development*, Ajit Mishra and Tridip Ray (eds.), Oxford University Press, Oxford, UK, 11, 174-201, 2018.

Economic Analysis Unit, Bangalore

1. Madhura, Swaminathan and Das, Arindam: Cropping Pattern, Productivity and Incomes from Crop Production, *How Do Small Farmers Fare: Evidence from Village Studies in India*, Madhura Swaminathan and Sandipan Bakshi (eds.), Tulika Books, New Delhi, 95-125, 2017.

2. Madhura, Swaminathan and Sivamurugan, T: PARI Villages: An Introduction, *How Do Small Farmers Fare: Evidence from Village Studies in India*, Madhura Swaminathan and Sandipan Bakshi (eds.), Tulika Books, New Delhi, 25-61, 2017.

3. Madhura, Swaminathan, Das, Arindam, Modak, Tapas, Sarkar, Biplab: Costs and Prices, *How Do Small Farmers Fare: Evidence from Village Studies in India*, Madhura Swaminathan and Sandipan Bakshi (eds.), Tulika Books, New Delhi, 171-200, 2017.

4. Madhura, Swaminathan and Bakshi, Sandipan: Conclusions, *How Do Small Farmers Fare: Evidence from Village Studies in India*, Madhura Swaminathan and Sandipan Bakshi (eds.), Tulika Books, New Delhi, 340-354, 2017.

Statistical Quality Control and Operations Research Division

SQC & OR Unit, Kolkata

1. Bandyopadhyay, A., Sett, R. and Manna, D.: The Problem of Fake Indian Currency Notes, *NOTE BANDI: Demonetisation and India's Elusive Chase for Black Money*, R. Ramkumar (ed.), Oxford University Press, New Delhi, 341-350, 2018.

2. Deepmala and Jana, Rwitam: Finiteness of Criss-Cross Method in Complementarity Problem, *Mathematics and Computing,* D. Giri, R.N. Mohapatra, H. Begehr and M.S. Obaidat (eds.), 170-180, Springer, Online VersionDOI: 10.1007/978-981-10-4642-1_2, 2017.

3. Das, A.K., Jana, R. and Deepmala: On Generalized Positive Subdefinite Matrices and Interior Point Algorithm, *Operations Research and Optimization*, Springer Nature Singapore Pvt. Ltd., Singapore, S. Kar, U. Maulik, Li X. (eds.), Springer Nature Singapore Pvt. Ltd., Singapore, 225, 3016, 2018.

Patents

Computer and Communications Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata

1. Nia, A., S., Sur-Kolay, Raghunathan, A. and Jha, N.K.: *Continuous Authentication System and Method Based on BioAura*, **U.S. Patent No.-15/425,440** filed 2017.

7. VISITING SCIENTISTS, HONOURS AND AWARDS

VISITING SCIENTISTS

A number of distinguished scientists from India and abroad participated in the research, training and other scientific activities of the Institute during the year. Some of them came to the Institute on invitation and spent fairly long periods in the Institute to assist in the regular research and teaching programmes, while others came for short periods and gave lectures and seminars. Most of them were available for consultation by the faculty members of the Institute. Names of the visiting scientists are given below.

Theoretical Statistics and Mathematics Division

Stat-Math Unit, Kolkata

1. Adhikari, Kartick, Dept. of Mathematics, IISc. Bangalore, April 05, 2017- February 05, 2019.
2. Asanuma, T., University of Toyama, Japan, February 17- March 15, 2018.
3. Bagchi, Sayan, INSPIRE Faculty, Since October 03, 2017 for five years.
4. Baier, Stephan, JNU, Delhi, July 01-10, 2017.
5. Basu, Deepan, INSPIRE Faculty, Since September 20, 2017 for five years.
6. Bhattacharya, Soumya, INSPIRE Faculty, Since October 04, 2017 for five years.
7. Bhattcharjee, Monika, University of Florida, August 14-22, 2017.
8. Chakraborty, Anirvan, Ecole Polytechnique Federale de Lausanne, Switzerland, January 01-March 31, 2018.
9. Chakraborty, Sagnik, School of Mathematics, TIFR, Mumbai, Since July 01, 2016- June 30, 2017.
10. Chakraborty, Sayan, Munster University, January 08-15, 2018.
11. Chowdhury, Indranil, HRI, Allahabad, September 06-October 05, 2017.
12. Drappeau, Sary Aurelien, Aix-Marseille University, November 06-13, 2017.
13. Ghosh, Sayan, Department of Mathematics, IIT, Bombay, January 01-March 31, 2018.
14. Ghosh, Surojit, School of Mathematical Sciences, Ramakrishna Mission Vivekananda University, July 01, 2017- February 28, 2018.
15. Holkar, Rohit Dilip, IISER, Pune, May 03-June 10, 2017.
16. Mawia, Ramdin, HRI, Allahabad, January 01- March 31, 2018.
17. Mohari, Anilesh, IMSc. Chennai, February 25- March 24, 2018.

18. Mukherjee, Mayukh, Technion-Israel Institute of Technology, Department of Mathematics, January 30-February 28, 2018.

19. Roy, Sutanu, NIISER, Bhubaneswar, 05-10 June, 2017.

20. Saha, Biswajyoti, TIFR, Mumbai, January 01-07, 2018.

21. Saha, Ekta, TIFR, Mumbai, January 01-07, 2018.

22. Saha, Koushik, Department of Mathematics, IIT, Bombay, 02-31 May, 2017 & December 13-22, 2017.

23. Selvan, A. Antony, Institute of Mathematical Science, Chennai, June 10, 2017-March 31, 2018.

24. Sensarma, Aryaman, IIT, Kanpur, June 27, 2017-July 31, 2018.

25. Singh, Saurabh Kumar, School of Mathematics, TIFR, Mumbai, July 01, 2016- June 30, 2017.

26. Zinna, Md. Ali, School of Mathematical Sciences, NISER, Bhubaneswar, October 23-27, 2017.

Stat-Math Unit, Delhi

1. Adhya, Sumanta, West Bengal State University, July 31-August 12, 2017.

2. Atik, Fouzul, IIT Kharagpur, July 13, 2017-July 12, 2018.

3. Barany, Michael, Dartmouth College, February 14-March 06, 2018.

4. Basu, Rabeya, IISER Pune, April 02-06, 2017 & September 04-October 22, 2017.

5. Bing, Zheng, Lanzhou University, December 04-08, 2017.

6. Chakraborty. Debopam, Tezpur University, Assam, June 29-July 05, 2017.

7. Chakraborty, Partha Sarathi, IMSc, Chennai, June 19-July 16, 2017.

8. Chaubey, Yogendra P., Concordia University, Canada, February 01-March 31, 2018.

9. Chintamani, Mohan, University of Hyderabad, June 12-18, 2017.

10. Das, Pranabesh, IMSc Chennai. February 14-March 13, 2018.

11. David, Sinnou, Université Pierre et Marie Curie, Jussieu, Paris, France, March 11-16, 2018.

12. Debashis, Paul, UC Davis, July 24-28, 2017.

13. Deshouillers, Jean-Marc, University of Bordeaux, France, April 14-17, 2017 & February 10-16, 2018.

14. Devi, A.R. Usha, Bangalore University, April 10-June 10, 2017; October 11-17, 2017 & January 13-23, 2018.

15. Drappeau, Sary, University of Marseilles, France, November 20-30, 2017.

16. Ganesan, Ghurumuruhan, NYU, Abu Dhabi, August 22-25, 2017.
17. Ghate, Eknath, TIFR Mumbai, December 11-15, 2017.
18. Ghosal, Subhasis, North Carolina State University, December 14-15, 2017.
19. Haq, Rukhsan-ul, JNCASR Bangalore, April 10-14, 2017.
20. Keane, Michael, NYU, Shanghai, May 10-16, 2017.
21. Kovse, Matjaz, University of Maribor, Slovenia, September 24-30, 2017.
22. Mallick, Anish, ICTS-TIFR, Bangalore, January 13-21, 2018.
23. Mandal, Arunava, IIT, Bombay, November 03, 2017- till November 02, 2018.
24. Mesnager, Sihem, University of Paris VIII, France, October 08-10, 2017.
25. Mishra, Manish, IISER, Pune, June 06-30, 2017.
26. Mishra, Nachiketa, International Centre for Theoretical Sciences, TIFR, Bengaluru, September 11-15, 2017.
27. Nandy, Rajesh, University of North Texas Health Science Center, Dallas, December 07-08, 2017.
28. Paul, Prabal, BITS Goa, June 12-17, 2017.
29. Ranjan, Pritam, IIM, Indore, May 03-04, 2017.
30. Reddy, Tulasi Ram, NYU, Abu Dhabi, October 20-28, 2017.
31. Roy, Rishideep, IIM, Bangalore, March 18-31, 2018.
32. Roy, Sutanu, NISER, Bhubaneswar, May 15-19, 2017.
33. Sahoo, Gopinath, IIT, Bhubaneswar, February 15, 2018- till February 14, 2019.
34. Saikia, Neelam, IIT, Guwahati, April 15-26, 2018.
35. Sengupta, Ritabrata, IISER, Berhampur, June 01-30, 2017.
36. Sharma, Divyum, University of Waterloo, Canada, April 17-30, 2017 & September 18-October 01, 2017.
37. Sharma, Rakesh Kumar, Shri Mata Vaishno Devi University, Katra, July 04-08, 2017.
38. Shorey, T.N., NIAS, Bangalore, November 12-21, 2017.
39. Sivasubramanian, S., IIT, Bombay, June 28-July 05, 2017.
40. Sofi, Mohammad Amin, University of Kashmir, January 25-February 28, 2018.
41. Waldschmidt, Michel, University of Paris VI, France, September 10-14, 2017.

42. Yaikhom, Gagarine, University of Edinburgh, UK, April 07-09, 2017.

Stat-Math Unit, Bangalore

1. Accardi, Luigi, Centro Interdipartimentale Vito Volterra, Italy, March 05- till April 05, 2018.
2. Aneesh, M., Visiting Scientist, July 01, 2017-March 31, 2018.
3. Banerjee, Tathagata, National Post Doctoral Fellowship, Since January 01-August 31, 2017 & September 01, 2017-till date.
4. Baryshnikov, Yuliy, University of Illinois at Urbana-Champaign, USA, February 06-10, 2018.
5. Chattopadhyay, Pratyusha, INSPIRE Faculty, Since November 01, 2013-till date.
6. Choudhuri, Manoj, NBHM Post-doctoral Fellow, April 03, 2017-till date.
7. Das, Bata Krishna, IIT, Mumbai, January 07-14, 2018.
8. De, Sandipan, NBHM Post-doctoral Fellow, February 01, 2017-till date.
9. Dolai, Dhriti Ranjan, INSPIRE Faculty, Since February 20-August 31, 2017 and September 01, 2017-till date.
10. Fakhruddin, Najmuddin, TIFR Mumbai, April 02-07, 2017.
11. Ganeshan, G., NYU, Abu Dhabi, July 04-11, 2017.
12. Gopalaswamy, Arjun, University of Oxford, UK, April 01, 2017-March 31, 2018.
13. Haria, Kalpesh, INSPIRE Faculty, Since June 18, 2015- August 17, 2017.
14. Jayanarayanan, C.R., IIT, Palakkad, June 18-23, 2017.
15. Kasilingam, Ramesh, INSPIRE Faculty, Since September 24, 2015-till date.
16. Krishnan, Arundhathi, JC Bose Fellowship, November 01, 2017-March 31, 2018.
17. Maji, Amit, NBHM Post-doctoral Fellow, October 01, 2015 - August 31, 2017 and NPDF Post-doctoral Fellow Since September 01, 2017-till date.
18. Majumder, Souradeep, ISF-UGC Project & National Post Doctoral Fellowship, Since July 31, 2015-June 06, 2017 & September 26-October 03, 2017.
19. Mukherjee, Mithun, IISER, Trivandrum, April 09-20, 2017.
20. Nair, Saranya, NBHM Post-Doctoral Fellow, Since March 31, 2017-till date.
21. Parameswaran, A.J., TIFR, Mumbai, September 25-October 03, 2017.
22. Raani, Senthil K.S., NBHM Post-Doctoral Fellow, December 04, 2017-till date.
23. Rajendran, Dhanya, INSPIRE Faculty, Since April 20, 2016-till date.

24. Ramachandran, Koushik, Oklahoma State University, Japan, June 01-09, 2017.
25. Rao, Koteswara, NBHM Post-Doctoral Fellow, September 27, 2017-till date.
26. Reddy, Harish, ISF-UGC Visiting Scientist, Since November 17, 2016-January 31, 2018.
27. Reddy, Nanda Kishore S., ISF-UGC Visiting Scientist, April 04, 2017-March 31, 2018.
28. Saha, Arnab, Australian National University, Australia, March 12-16, 2018.
29. Sarkar, Santanu, INSPIRE Faculty, October 31, 2016-till date.
30. Sen, Sanchayan, McGill University, Canada, May 30-June 04, 2017.
31. Shekhar, Atul, ISF-UGC Visiting Scientist, Since May 30, 2016-July 31, 2017 & January 11-27, 2018.
32. Sivaguru, R., TIFR, Mumbai, April 04-09, 2017.
33. Srinivasan, R., CMI, Chennai, May 10-21, 2017 and August 01-September 22, 2017.
34. Soulier, Philippe, University Paris Nanterre, France, February 10-22, 2018.
35. Subhash, B., IISER, Tirupathi, July 09-19, 2017 and February 25-March 03, 2018.
36. Tappe, Stefan, University of Hannover, Germany, August 28-September 01, 2017.
37. Thakur, Ajay Singh, IIT, Kanpur, July 09-19, 2017 & February 25-March 03, 2018.
38. Toth, Balint, University of Bristol, UK & Alfréd Rényi Institute of Mathematics, Hungarian, Academy of Sciences, Hungary, March 11-15, 2018.
39. Vaish, Vaibhav, INSPIRE Faculty, Since January 04, 2016-till date.
40. Vsemirnov, Maxim A., St. Petersburg Department of Steklov, Russia, March 01, 2018 for 2 months.

Applied Statistics Division

Applied Statistics Unit, Kolkata

1. Karati, Sabyasachi, University of Calagary, Canada, June 01-August 07, 2017.
2. Panda, Kumar Mahesh, Central University of Odisha, May 23-June 23, 2017.
3. Shukla, Ankur, Indian Institute of Technology, Dhanbad, June 19-23, 2017.

Interdisciplinary Statistical Research Unit, Kolkata

1. Chee, Chew-Seng, School of Informatics and Applied Mathematics, University Malaysia Terengganu, Malaysia, January 15-February 15, 2018.

2. Jana, Nabakumar, National Institute of Technology, Shillong, June 01-July 31, 2017.

3. Roy, Vivekananda, Iowa State University, USA, May 17-July 17, 2017.

Applied Statistics Unit, Chennai

1. Chacko, Daphna, National Institute of Technology, Calicut, November 19-December 09, 2017.

2. Koul, Hira. L., Michigan State University, USA, December 13-27, 2017.

3. Hallin, Marc European Centre for Advanced Research in Economics and Statistics (ECARES), Belgium, February 09-12, 2018.

Applied and Official Statistics Unit, Tezpur

1. Barman, Radha Binod, National Statistical Commission, Govt. of India, March 23-25, 2018.

2. Kulkarni, Ravindra Shripad, Bhaskaracharya Pratishthana, Pune, March 22-26, 2018.

3. Lahkar, Ratul, Indian Institute of Management, Udaipur, October 09-10, 2017.

Computer and Communication Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata

1. Bhattacharya, Anup, IIT, Delhi**,** January 01-March 31, 2018.

2. Chakraborty, Basabi, Iwate Prefectural University, Japan, December 21, 2017-January 01, 2018.

3. Ditmarsch, Hans Van, LORIA, France, March 07-10, 2018.

4. Dutta, Kunal, INRIA, Sophia Antipolis Cedex, France, December 19, 2017-January 09, 2018.

5. Kalyanraman, Ananth, School of EECS, Washington State University, USA, December 24-30, 2017.

6. Pach, Janos, EPFL Lausanne and Renyi Institute, Budapest, during January 14 - 22, 2018

7. Paul, Subhabrata, IIT, Patna, February 20-23, 2018.

8. Saket Saurabh, IMSC, Bangalore, December 24, 2017-January 03, 2018.

9. Santoro, Nicolo, School of Computer Science, Carleton University, Canada, December 03-09, 2017.

10. Valtr, Pavel, Charles University, Czech Republic, February 17-21, 2018.

Computer Vision and Pattern Recognition Unit, Kolkata

1. Roy, Partha Pratim, IIT, Roorkee, December 12-27, 2017.
2. Shivakumara, P., University of Malaya, Malaysia, August 12-19, 2017.
3. Rittscher, Jens, University of Oxford, U.K, January 22-February 03, 2018.

Electronics and Communication Sciences Unit, Kolkata

1. Chang, Qin, China University of Petroleum, March 10-24, 2018.
2. Chatterjee, Aratrik, IISc, Bangalore, August 14, 2017-February 14, 2018.
3. Majumder, Angshul, IIIT, Delhi, May 30-July 28, 2017.
4. Paul, Prithwineel, IIT, Madras, January 01-March 31, 2018.
5. Wang, Jian, China University of Petroleum, December 03-21, 2017 and March 10-24, 2018.
6. Zhang, Huaqing, China University of Petroleum, December 03, 2017-January 09, 2018.

Machine Intelligence Unit, Kolkata

1. Dauda, Kazeem Adesina, Kwara State University, Nigeria, September 15, 2017-March 14, 2018.
2. Mallik, Saurav, Department of Biostatistics, University of Miami, Florida, USA, December 01- 22, 2017.
3. Phophalia, Ashish, IIIT, Vadodara, Gujrat, May 22-July 22, 2017.

Documentation, Research and Training Centre, Bangalore

1. Satija, M.P., Guru Nanak Dev University, Amritsar, Punjab, August-October, 2017.

Systems Science and Informatics Unit, Bangalore

1. Edwin R Hancock, Department of Computer Science, University of York, UK, December 26-30, 2017.
2. Laurent Najman, Laboratoire d'Informatique Gaspard Monge, ESIEE, Universite Paris-EST, France, December 27, 2017-January 04, 2018.
3. Nitin Williams, MRC, Cambridge University, UK, April 05-06, 2017.
4. Paul A. Rosen, Jet Propulsion Laboratories (JPL), NASA-Caltech, USA, June 11-13, 2017.
5. P.N. Suganthan, School of Electronics and Electrical Engineering, Nanyang Technological University, Singapore, December 26-30, 2017.

6. Robert M. Haralick, Graduate Center, City University, New York, USA, December 25-31, 2017.

7. Sargur Srihari, University at Buffalo, The State University, New York, USA, December 26-30, 2017.

8. William J. Emery, Colorado University at Boulder, USA, June 11-13, 2017.

Computer Science Unit, Chennai

1. Chacko, Daphna, National Institute of Technology, Calicut, November 19-December 09, 2017.

2. Koul, Hira L., Michigan State University, USA, December 13-27, 2017.

Physics and Earth Sciences Division

Geological Studies Unit, Kolkata

1. Basilici, Giorgio, DGRN, Institut de Geociencias, University of Campinas, São Paulo, Brazil, November 20-December 24, 2017.

2. Bhattacharya, S.K., Research Centre for Environmental Changes, Academia Sinica, Taipei, Taiwan, August 04, 2017.

3. Elzbeita M. Teschner, University of Opole, Poland, February 14-28, 2018.

4. Hughes, Nigel, University of California (Riverside), USA, March 26-31, 2018.

5. Joyce, Walter, University of Fribourg/Freiburg, Switzerland, January 15-20, 2018.

Physics and Applied Mathematics Unit, Kolkata

1. Das, T., Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Maryland, USA, October 09-March 31, 2018.

2. De, Debajyoti, The Neotia University, West Bengal, November 01, 2017- March 31, 2018.

3. Paulsamy, Muruganandam, Department of Physics, Bharathidasan University, Tiruchirappalli, October 03-07, 2017.

4. Rahaman, R., Department of Mathematics, Allahabad University, June 19-July 24, 2017.

5. Rakshit, B., Department of Mathematics, Amrita University, Coimbatore, June 15-22, 2017.

Biological Sciences Division

Agricultural & Ecological Research Unit, Kolkata

1. Edmonds, Christopher, Tokyo International University, Japan, March 10-19, 2018.

Human Genetics Unit, Kolkata

1. Dutta, Arindam, CSIR- Indian Institute of Chemical Biology (IICB), July 12-October 11, 2017.

Social Sciences Division

Economic Research Unit, Kolkata

1. Bera, Anil, Department of Economics, University of Illinois, USA, June 21–July 04, 2017 & January 08-10 and 15-16, 2018.

2. Bhowmik, Anuj, Department of Economic, School of Humanities and Social Sciences, Shiv Nadar University, Greater Noida, Uttar Pradesh, June 13-July 10, 2017 & December 15, 2017-January 04, 2018.

3. Chakraborty, Bikas, K. Centre for Applied Mathematics & Computational Science, Saha Institute of Nuclear Physics, Kolkata, Since August, 2017.

4. Chatterjee, Kalyan, Department of Economics, The Pennsylvania State University, University Park, USA, June 23-July 16, 2017.

5. De, Parikshit, Department of Economic Sciences, Indian Institute of Science Education and Research, Bhopal, Madhya Pradesh, August 01- September 14, 2017.

6. De, Utpal K., Department of Economics, North-Eastern Hill University, Shillong, Meghalya, December 12, 2017-February 06, 2018.

7. Ferrero, Mario, Department of Economics, University of Eastern Piedmont, Via del Duomo, Italy, September 20-November 30, 2017

8. Ghosh, Arghya, School of Economics, UNSW Business School, University of New South Wales, Sydney, Australia, June 19-30, 2017 & March 19-30, 2018.

9. Kundu, Srikanta, Centre for Development Studies, Trivandrum, Kerala, June 08-July 03, 2017.

10. Mondal, Debasis, Department of Humanities & Social Science, IIT, New Delhi, April 10-16, 2017 & May 23-June 14, 2017.

11. Saha, Shrabani, Lincoln International Business School, University of Lincoln, Lincoln, UK, August 04-27, 2017.

12. Sinha, Uday Bhanu, Department of Economics, Delhi School of Economics, University of Delhi, June 19-30, 2017.

Linguistic Research Unit, Kolkata

1. Barlow, Michael, Applied Linguistics Studies, University of Auckland, New Zealand, March 02, 2018.

2. Bhattacharya, Mahidas School of Languages and Linguistics, Jadavpur University, Kolkata, June 27, 2017.

3. Chakrabarty, Jayshree, IIT, Kharagpur, June 27, 2017.

4. Chakrabarty, Rajib, SNLTR, Kolkata, November 8, 2017.

5. Chatterjee, Sanjay, KIT, Kalyani, West Bengal, December 1, 2017.

6. Dan, Mina, Calcutta University, Kolkata, June 22, 2017.

7. Das Biswas, Samapika, Institute of Engineering and Management, Salt Lake, Kolkata, October 13, 2017.

8. Ehsanul Kabir, Md., Mitcham Institute, Victoria, Australia, November 08, 2017.

9. Ghosh, Shantanu, MIT, USA, December 28, 2017.

10. Mukherjee, Sunanda, Asiatic Society, Kolkata, December 18, 2017.

11. Paul, Mousumi, Institute of Engineering and Management, Salt Lake, Kolkata, October 13, 2017.

12. Prasad, Rajendra, IIIT, Sri City, Andhra Pradesh, December 01, 2017.

13. Rasid, Mamun, Dept. of Information Technology, Govt. of Bangladesh, November 17, 2017.

14. Ray, Kaushik, Barasat State University, Barasat, West Bengal, June 30, 2017.

15. Reza, Md. Selim, Shahjalal University of Science and Technology (SUST), Bangladesh, December 20, 2017.

16. Saha, Atanu, School of Languages and Linguistics, Jadavpur University, Kolkata, June 22, 2017.

17. Saha, Diganta, Dept. of Computer Science and Engnineering, Jadavpur University, Kolkata, October 10, 2017.

18. Santosh, T.S., Institute of English Teaching, Muscat, Oman, June 20-21, 2017.

19. Warsi, M. Jahangir, Washington University, St. Luis. USA, July 12, 2017.

Psychology Research Unit, Kolkata

1. Banerjee, Usri, University of Calcutta, Kolkata, December 04, 2017.

2. Basu Amrita, Jadavpur University, Kolkata, March 14, 2018.

3. Basu, Jayanti, University of Calcutta, Kolkata, March 15, 2018.

4. Chatterjee, Ishita, University of Calcutta, Kolkata, August 11, 2017.

5. Chatterjee, Susmita, Maharaja Manindra College, Kolkata, December 05, 2017.

6. Kumar, Subodh, Brain Behaviour Research Foundation, Gurgaon, December 06, 2017.

7. Mani, Smritikana, Calcutta Medical College, Kolkata, March 14, 2018.
8. Mishra, Aloke K., Brain Behaviour Research Foundation, Gurgaon, December 06, 2017.
9. Mishra, Meena, Brain Behaviour Research Foundation, Gurgaon, December 06, 2017.
10. Mondal, Ananya, University of Calcutta, Kolkata, December 05, 2017.
11. Mondal, Manas K., IIT, Kharagpur, August 11, 2017.
12. Mukherjee, Divyagopal, R.G. Kar Medical College, Kolkata, December 06, 2017.
13. Mukherjee, S.P. University of Calcutta, Kolkata, December 08, 2017.
14. Mukhopadhyay, Susmita, IIT, Kharagpur, August 11, 2017 & December 05, 2017.
15. Mukhopadhyay, Pritha, University of Calcutta, Kolkata, December 05, 2017.
16. Pal, Sujit, Department of Higher Education, Govt. of West Bengal, December 04, 2017.
17. Roy, Prasanta, Psychiatry Centre for Excellence, Kolkata, December 05, 2017.
18. Subramanian, Lalitha, Ramchandra University, December 08, 2017.
19. Tarafder, Sreemoyee, West Bengal State University, Barasat, West Bengal, December 04, 2017.

Sampling and Official Statistics Unit, Kolkata

1. Lahiri, Parthasarathi, Joint Program in Survey Methodology (JPSM) & Department of Mathematics, University of Maryland, USA, September 05, 2017.

Economics and Planning Unit, Delhi

1. Altug, Samru, KOC University, Turkey, October 26, 2018.
2. Aney, Madhav S., Singapore Management University, Singapore, April 28, 2017.
3. Anukriti, S, Boston College, USA, July 21, 2017.
4. Bhadury, Soumya Suvra, National Council of Applied Economics Research, New Delhi, May 19, 2017.
5. Bhalla, Manaswini, IIM Bangalore, May 05, 2017.
6. Bhargava, Alok, University of Maryland, USA, March 06, 2018.
7. Bluffstone, Randall A., Portland State University, USA, February 23, 2018.
8. Bradford, Scott, Brigham Young University, USA, July 24-December 31, 2017.
9. Chakraborty, Pavel, Jawaharlal Nehru University, New Delhi, October 27, 2017.

10. Chakravarty, Shoibal, Ashoka Trust for Research in Ecology and the Environment, Bangalaore, January 13-15, 2018.

11. Chatterjee, Swarnendu, Maastricht University, Netherlands, October 03, 2017-till October 02, 2018.

12. Chaudhuri, Ritwik, IBM, India Research Laboratory, New Delhi, January 19, 2018.

13. Das, Piyali, Indiana University, USA, August 01, 2017-till July 31, 2018.

14. Das, Sanjukta, National Council of Applied Economic Research, New Delhi, February 02, 2018.

15. Das, Mausumi, Delhi School of Economics, New Delhi, November 03, 2017.

16. Dasgutpa, Kunal, University of Toronto, Canada, Since January 15-April 30, 2017.

17. Deb, Rahul, University of Toronto, Canada, August 29, 2017.

18. Dubey, Pradeep, Stony Brook University, USA, May 23, 2017.

19. Dutta, Bhaskar University of Warwick, UK and Ashoka University, Haryana, September 01, 2017 and March 16, 2018.

20. Gopalakrishnan, Pawan, RBI, Mumbai, Govt. of India, May 01-05, 2017.

21. Halevy, Yoram, University of British Columbia and University of Toronto, Canada, February 22, 2018.

22. Hassler, John, IIES, Stockholm University, Sweden, March 22, 2018.

23. Jain, Chandan, Shiv Nadar University, Uttar Pradesh, March 01-31, 2018.

24. Javadekar, Apoorva, Centre for Advanced Financial Research and Learning (CAFRAL), Mumbai, September 07, 2017.

25. Juneja, Sandeep, TIFR, Mumbai, January 10, 2018.

26. Kacker, Kanishka, World Bank Group, Washington D.C., USA, May 29, 2017.

27. Kishore, Kaushal, University of Pretoria, South Africa, April 17, 2017.

28. Kochhar, Nishtha, Georgetown University, USA, August 18, 2017.

29. Krishnapriya, P.P., Delhi School of Economics, New Delhi, May 04, 2017 & August 11, 2017-till August 10, 2018.

30. Kumru, Cagri S, Australian National University, Australia, October 26, 2018.

31. Lahiri, Amartya, University of British Columbia, Canada & Centre for Advanced Financial Research and Learning (CAFRAL), Mumbai, September 15, 2017.

32. Mani, Subha, Fordham University, USA, July 25-August 06, 2017.

33. Maniquet, François, Université catholique de Louvain, Belgium, March 19, 2018.

34. Mitra Thakur, Gogol, Ambedkar University, Delhi, October 18, 2017.
35. Mookherjee, Dilip, Boston University, USA, March 07-09, 2018.
36. Moorthy, Sridhar, University of Toronto, Canada, November 08, 2017.
37. Morduch, Jonathan, New York University (NYU), USA, July 26, 2017.
38. Nath, Swaprava, Carnegie Mellon University, USA, July 07, 2017.
39. Pant, Manoj, Jawaharlal Nehru University, New Delhi, October 06, 2017.
40. Patnaik, Megha, Stanford University, USA, July 20, 2017-till July 19, 2018.
41. Raghavan, Madhav, HEC, University of Lausanne, Switzerland, January 12, 2018.
42. Sane, Renuka, National Institute of Public Finance and Policy, New Delhi, July 24-November 30, 2017.
43. Sarkar, Sumit, University of Texas at Dallas, USA, October 13, 2017.
44. Serizawa, Shige, Osaka University, Japan, March 20, 2018.
45. Sharma, Bhavyaa, National Institute of Public Finance and Policy, New Delhi, January 01-till April 30, 2018.
46. Singh, Gurbachan, Free Lancer, January 01-till April 30, 2018.
47. Sinha, Pramod, National Institute of Public Finance and Policy, New Delhi, January 01 - April 30, 2018.
48. Venkatesh, Raghul, Aix-Marseille School of Economics, France, March 09, 2018.
49. Wadhwa, Wilima, ASER Centre, New Delhi, July 24-November 30, 2017.

Economic Analysis Unit, Bangalore

1. Durga A.R, Tamil Nadu Agricultural University, Coimbatore, January 01-March 31, 2018.
2. Kamra Ashish , PEC University of Technology, Chandigarh, October 25-November 13, 2017.
3. Narayana, D., Gulati Institute of Finance and Taxation, Trivandrum, Kerala, June 26-20, 2017.
4. Pais, Jesim, Institute for Studies in Industrial Development, New Delhi, February 13-20, 2018.
5. Singh, Shamsher, Indian Institute of Management, Ahmedabad, November 23-February, 22, 2018.

Statistical Quality Control and Operations Research Division

SQC & OR Unit, Delhi

1. Raghavan, T.E.S., University of Illinois, Chicago, USA, March 01-10, 2018.

SQC & OR Unit, Chennai

1. Chacko, Daphna, National Institute of Technology, Calicut, November 19-December 9, 2017.

2. Hallin, Marc, European Centre for Advanced Research in Economics and Statistics (ECARES), Belgium, February 09-12, 2018.

3. Koul, Hira L, Michigan State University, USA, December 13- 27, 2017.

SQC & OR Unit, Coimbatore

1. Arthanari, T.S., Business School, Auckland, New Zealand. January 06, 2018.

HONOURS AND AWARDS

Theoretical Statistics and Mathematics Division

Stat-Math Unit, Kolkata

Gupta, N.:
Awarded: B.M. Birla Science Prize in Mathematics, 2017.

Munshi, R.:
Awarded: Infosys Prize 2017 for Mathematical Sciences, 2017.
Selected: Fellow of the Indian Academy of Sciences, 2017.

Stat-Math Unit, Bangalore

Yogeshwaran, D.:
Awarded: The INSA Young Scientist Award, Indian National Science Academy (INSA), 2017.

Applied Statistics Division

Interdisciplinary Statistical Research Unit, Kolkata

Das, K.:
Selected: Associate Fellow, West Bengal Academy of Science and Technology, 2018.

Ghosh, A:
Awarded: (1) Prof. A.M. Mathai Award for the best Research paper, Indian Mathematical Society, 2017;
(2) Bose-Nandi Young Statistician Award (1st Place), Calcutta Statistical Association (CSA), 2017;
(3) ISCB Conference Awards for Scientists (CASc*)* for biostatisticians from the countries underdeveloped in clinical biostatistics, International Society for Clinical Biostatistics, 2017.

Computer and Communication Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata

Bhattacharya, B.B.:
Awarded: INAE Chair Professorship, Indian National Academy of Engineering, Since 2016-2018.

Computer Vision and Pattern Recognition Unit, Kolkata

Bhattacharya, U.:
Awarded: (1) Best Paper Award, 3rd International Conference on Next Generation Computing Technologies, 2017;
(2) Best Paper Award, 7th International Conference on Soft Computing for Problem Solving 2017.

Mitra, M.:
Awarded: Association for Computing Machinery's Special Interest Group on Information Retrieval Test of Time Award, 2017.

Pal, U.:
Selected: Fellow of the West Bengal Academy of Science and Technology, 2017.

Electronics and Communication Sciences Unit, Kolkata

Mukherjee, D.P.:
Selected: Fellow of West Bengal Academy of Science and Technology, 2017.

Machine Intelligence Unit, Kolkata

Bandyopadhyay, S.
Awarded: (1) Distinguished Alumnus Award, IIT, Kharagpur, 2017;
(2) National Leadership Award in Science and Technology (Young), Lakshmipat Singhania-IIM Lucknow, 2017;
(3) Infosys Prize for Engineering and Computer Science, 2017;
(4) J.C. Bose Fellowship, Engineering Sciences, DST, Govt. of India, 2017-2022;

De, R.K.:
Awarded: Fulbright-Nehru Academic and Professional Excellence Fellowship (Flex Award), 2016- 2018.

Mitra, S.:
Awarded: Fulbright-Nehru Academic and Professional Excellence Fellowship (Flex Award), 2018- 2019.
Selected: INAE Chair Professor, 2018-2019.

Physics and Earth Sciences Division

Physics and Applied Mathematics Unit, Kolkata

Pal, S.:
Awarded: Research Alumni Strategy Grant, University of Bonn, Germany, 2018.

Social Sciences Division

Psychology Research Unit, Kolkata

Dutta Roy, D.:
Awarded: Innovative Scientist Award, Indian Academy of Health Psychology, 2017.

Sociological Research Unit, Giridih

Behera, Hari Charan
Selected: (1) Fellow, Royal Asiatic Society of Ireland & Great Britain, 2017;

(2) Fellow, Royal Anthropological Institute, London, 2017.

Economics and Planning Unit, Delhi

Mishra, D.:
Awarded: Mahalanobis Memorial Award, The Indian Econometric Society, 2018.

Mukhopadhyay, A.:
Awarded: Honorary Associate Researcher, Centre for Science and Humanities, CNRS (France).

Sen, A.:
Awarded: Siwei Cheng Prize in Economics, The World Academy of Sciences, 2017.

Economic Analysis Unit, Bangalore

Ramachandran, V.K.:
Appointed: Vice Chairman, Kerala State Planning Board, Trivandrum.

Swaminathan M.:
Appointed: Non-Official Director, Board of Nationalised Bank, Union Bank of India.

Center for Soft Computing Research, Kolkata

Bandyopadhyay, S.:
Awarded: Student Paper Award, National Workshop on Remote Sensing and Application (RSA), IEEE GRSS Kolkata Chapter.

Pal, S.K.:
Selected: IEEE Tencent Rhino-Bird International Expert, 2017.

8. EDITORIAL AND OTHER SCIENTIFIC ASSIGNMENTS

EDITORIAL ASSIGNMENTS

Theoretical Statistics and Mathematics Division

Stat-Math Unit, Kolkata

Basak, G.K. (Editor): *Sankhya Series A*, Indian Statistical Institute.

Stat-Math Unit, Delhi

Bandyopadhyay, A. (Associate Editor): *Sankhya Series A*, Springer and Indian Statistical Institute; (Associate Editor): *Journal of Statistical Planning and Inference (JSPI)*, Elsevier.

Dewan, I. (Associate Editor)*: Journal Indian Statistical Association*.

Stat-Math Unit, Bangalore

Bhat, B.V. Rajarama (Chief Editor): *Proceedings of the Indian Academy of Sciences, Mathematics*.

Applied Statistics Division

Applied Statistics Unit, Kolkata

Dewanji, A. (Associate Editor): *Journal of Statistical Planning and Inference*, Elsevier.

Interdisciplinary Statistical Research Unit, Kolkata

Basu, A. (Associate Editor): *Computational Statistics*, Springer.

Bose, S. (Associate Editor): *Sankhya .A.*

SahaRay, R. (Associate Editor): *Sankhya A,* Springer; (Associate Editor): *Journal of Indian Society of Agricultural Statistics*.

Computer and Communication Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata

Bhattacharya, B.B. (Editor): *Journal of Electronic Testing: Theory and Applications*, Springer; *Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization*, Taylor & Francis.

Editorial and other Assignments

Sur-Kolay, S. (Associate Editor): *ACM Transactions on Embedded Computing Systems*, ACM.

Computer Vision and Pattern Recognition Unit, Kolkata

Garain, U. (Associate Editor): *International Journal of Document Analysis and Recognition*, Springer.

Pal, U. (Associate Editor): *Pattern Recognition*, Elsevier, Since 2016; *Pattern Recognition Letters*, Elsevier, Since 2014; *ACM Transactions on Asian and Low-Resource Language Information Processing* (*TALLIP*), ACM, Since 2012; *IET Biometrics*, IET, Since 2016; *International Journal of Document Analysis and Recognition*, Springer, Since 2015.

Electronics and Communication Sciences Unit, Kolkata

Mukherjee, D.P. (Associate Editor): *IEEE Transactions on Image Processing*, Since November 2014; *IET Image Processing*, Since February 2016; *SADHANA, Academy Proceedings in Engineering Sciences*, Springer, Since June 2014.

Pal, N.R. (Associate Editor): *IEEE Transactions on Cybernetics*, IEEE, 2017; *International Journal of Approximate Reasoning*, Elsevier, 2017; *Journal of Neuroscience and Neuroengineering***,** American Scientific Publishers, 2017.

Machine Intelligence Unit, Kolkata

Bandyopadhyay, S. (Associate Editor): *IEEE Transactions on Systems, Man and Cybernetics: Systems (IEEE)*.

De, R.K. (Associate Editor): *Sadhana.*

Ghosh, A. (Associate Editor): *IET Computer Vision.*

Mitra, S. (Editor): *IEEE/ACM Trans. on Computational Biology and Bioinformatics* (IEEE), *Wiley; Interdisciplinary Reviews: Data Mining and Knowledge Discovery*; *Information Sciences*; *Neurocomputing*; *INAE Letters; Fundamenta Informaticae.*

Systems Science and Informatics Unit, Bangalore

Daya Sagar*,* B.S. (Editorial Advisory Board Member): *Computers & Geosciences*; (Review Editor): *Frontiers: Environmental Informatics*; (Guest Editor): *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*; (Lead Editor): *Handbook of Mathematical Geosciences: Fifty Years of IAMG,* Springer; (Associate Editor): *Springer Indian Statistical Institute Series*.

Physics and Earth Sciences Division

Geological Studies Unit, Kolkata

Patranabis-Deb, S. (Editor): *Geological Journal*, Wiley-Blackwell Group, Since 2014; *Geological Magazine*, Cambridge University Press, Since 2017.

Saha, D. (Editor): *Indian Journal of Geology*; (Section Editor): *Current Science*; (Editorial Advisory Board Member): *Indian Journal of Geosciences*.

Physics and Applied Mathematics Unit, Kolkata

Pal, S. (Member of the Consortium): *CMB Bharat* (a proposed Indian space mission for Cosmic Microwave Background observations).

Social Sciences Division

Economics Research Unit, Kolkata

Chakravarty, S.R. (Associate Editor): *Social Choice and Welfare*, Springer Verlag.

Majumder, A. (Associate Editor): *International Econometric Review*, Econometric Research Association, Since 2009.

Sarkar, N. (Associate Editor): *Indian Growth and Development Review*, Emerald Group Publishing Limited, Since 2008; *International Econometric Review*, Econometric Research Association, Since 2009.

Linguistic Research Unit, Kolkata

Dasgupta, P. (Editor with István Ertl, Suso Moinhos, Jesper Lykke Jacobsen): *Beletra Almanako*, New York: Mondial.

Dash, N.S. (Editor-in-Chief): *Journal of Advanced Linguistic Studies;* (Review Board Member): *GLOSSA*; (Lexicographical Advisor): *Bengali Dictionary Project*, Oxford University Press, From February-till September 2018; (Advisory Committee Member): *Technological Development of Rajasthani Language*, JRN Rajasthan Vidyapeeth, 2017- 2019.

Sociological Research Unit, Kolkata

Jana, R. (Statistical Editor): *Indian Journal of Dermatology*, Since 2012-17.

Economics and Planning Unit, Delhi

Mishra, D. (Associate Editor): *Mathematical Social Sciences,* Since January 2014; *Social Choice and Welfare*, Since November 2016; *Journal of Mechanism and Institution Design,* Since 2016.

Ghate, C. (Policy Editor): *Indian Growth and Development Review*, Since 2008; (Editorial Advisory Board): Reserve Bank of India, Occasional Paper Series.

Roy Chowdhury, P. (Editor): *Indian Growth and Development Review*.

Somanathan, E. (Editor): *Environment and Development Economics*, Cambridge University Press Journal, Since January 2015.

Editorial and other Assignments

Economics and Analysis Unit, Bangalore

Ramachandran, V.K. (Editor): *Review of Agrarian Studies*.

Centre for Soft Computing Research, Kolkata

Ghosh, A. (Associate Editor): *IET-Computer Vision.*

Pal S.K. (Associate Editor): *Information Sciences,* Elsevier; *Fuzzy Sets and Systems*, Elsevier; *Fundamenta Informaticae*, IOS Press; *Int. J. Pattern Recognition and Artificial Intelligence*, World Scientific; *Int. J. Computational Intelligence and Applications*, World Scientific; *IET Image Processing*, IEE Press; *LNCS Trans. on Rough Sets*, Springer; (Editor-in-Chief): *International Journal of Signal Processing, Image Processing and Pattern Recognition*, SERSC; (Executive Advisory Editor): *International Journal of Approximate Reasoning*; *International Journal of Computational Science and Engineering; International Journal of Image and Graphics*; *International Journal of Business Intelligence and Data Mining; International Journal of Machine Intelligence and Sensory Signal Processing; (*Guest Editor): *Pattern Recognition Letters; IET Image Processing*, *Natural Computing*, Springer; (Book Series Editor): *Frontiers in Artificial Intelligence and Applications (FAIA)*, IOS Press; *Statistical Science and Interdisciplinary Research,* World Scientific; (Book Editor): *Pattern Recognition and Big Data,* World Scientific Press; *Soft Computing Applications in Sensor Networks*, CRC (Taylor & Francis) Press.

SCIENTIFIC ASSIGNMENTS/ACADEMIC VISITS ABROAD

Theoretical Statistics and Mathematics Division

Stat-Math Unit, Kolkata

Datta, M.:
(1) International Centre for Theoretical Physics, Trieste, Italy, February 18-20, 2018; (2) University of Cagliari, Cagliari, Italy, February 16-17, 2018.

Stat-Math Unit, Delhi

Bandyopadhyay, A.:
(1) 10th ISI-ISM-ISSAS Three Institute Joint Meeting, ISM, Tokyo, Japan, November 30-December 02, 2017.

Bapat, R.B.:
(1) International Linear Algebra Society, Ames, Iowa, USA, July 24-28, 2017; (2) Department of Statistics, University of Tokyo, Japan, 13-24 November, 2017.

Chatterjee, A.:
(1) 10th ISI-ISM-ISSAS Three Institute Joint Meeting, Institute of Statistical Mathematics (ISM), Tokyo, Japan, November 29-December 01, 2017; (2) University of Minnesota, USA, December 28-29, 2017.

Dewan, I.:
(1) International Conference on Mathematical Methods in Reliability (MMR 2017), Grenoble, France, July 03-06, 2017.

Jain, T.:
(1) Department of Mathematics, Iowa State University, July 24-28, 2017.

Stat-Math Unit, Bangalore

Bhat, B.V.R.:
(1) Tokyo University of Science, October 1-7, 2017.

Rajeev, B.:
(1) University of Freiburg, Germany, March 2-9, 2018.

Sarkar, J.:
(1) Hebei Normal University, China, May 13-21 2017; (2) Tsinghua Sanya International Mathematics Forum (TSIMF), Sanya, China, May 22-27, 2017; (3) Technion, Israel, June 16-26, 2017.

Yogeshwaran, D.:
(1) Purdue University, USA, July 26-29, 2017; (2) Banff International Research Station, Banff, Canada, July 30-August 04, 2017.

Applied Statistics Division

Applied Statistics Unit, Kolkata

Dewanji, A.:
(1) Fred Hutchinson Cancer Research Centre, Seattle, USA, 30 July 30-August 25, 2017.

Sengupta, D.:
(1) 61st World Statistics Congress (WSC)**,** Marrakech, Morocco, July 16-21, 2017.

Interdisciplinary Statistical Research Unit, Kolkata

Basu, A.:
(1) Complutense University, Madrid, Spain, May 04-11, 2017.

Ghosh, A.:
(1) Complutense University of Madrid, Spain, July 02-08, 2017; (2) International Society of Clinical Biostatistics (ISCB) Conference 2017, Vigo, Spain, July 08-14, 2017; (3) University of Oslo, Norway, January 03-13, 2018.

SahaRay, R.:
(1*)* Indiana University & Purdue University, Indiana, Department of Mathematical Sciences, USA, November 01-30, 2017; (2) Institute of Applied Statistics, Sri Lanka, December 28-29, 2017.

Applied Statistics Unit, Chennai

Sudheesh, K.K.:
(1) 10th MMR Conference, Université Grenoble Alpes, Grenoble, France, July 3-6, 2017.

Editorial and other Assignments

Applied and Official Statistics Unit, Tezpur

Jyethi, D.S.:
(1) Research Triangle Park, North Carolina, USA, October 15-19, 2017.

Computer and Communication Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata

Das, N.:
(1) 42nd IEEE-LCN 2017 Conference, Singapore, October 07–13, 2017.

Nandy, S.:
(1) NII Shonan Workshop on Geometric Graphs, Algorithms and Applications, Shonan Village, Tokyo, Japan, October 30 – November 02, 2017.

Sur-Kolay, S.:
(1) 35th IEEE International Conference (ICCD 2017), Boston Massachusetts (MA), USA, November 05-17, 2018.

Ghosh, S.C.:
(1) 31st AINA 2017 Conference, Taipei, Taiwan, Mar 24–April 03, 2017.

Banerjee, A.:
(1) Workshop on Pioneering Processor Paradigms, Austria, February 24–28, 2018.

Computer Vision and Pattern Recognition Unit, Kolkata

Pal, U.:
(1) CDAR-WML: Workshop on Machine Learning, Kyoto, Japan, November 11, 2017; (2) Fellow of International Association for Pattern Recognition (IAPR), 2018; (3) 14th International Conference on Document Analysis and Recognition (ICDAR), Kyoto, Japan, November 13-15, 2017; (4) 4th Asian Conference on for Pattern Recognition (ACPR), Nanjing, China, November 26-29, 2017.

Electronics and Communication Sciences Unit, Kolkata

Das, S.:
(1) 23rd International Conference on Soft Computing, Brno, Czech Republic, June 20-22, 2017; (2) 13th International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery (ICNC-FSKD 2017), Guilin, China, July 29-31, 2017; (3) School of Mechanical Science and Engineering, Huazhong University of Science & Technology, Wuhan, China, November 18-20, 2017; (2) School of Electrical Engineering, Zhengzhou University, China, November 21–26, 2017.

Mukherjee, D.P.:
(1) IEEE International Symposium on Biomedical Imaging (ISBI) 2017, Melbourne, Australia, April 18-21, 2017; (2) Reinforced Random Forest at the University of Technology Sydney, April 24, 2017.

Pal, N.R.:
(1) Politecnico diMilano, Italy, April 10, 2017, (2) CIS Workshop on Computational Intelligence, La Serena, Chile, April 21, 2017; (3) Computational Intelligence and Machine Learning: Trends,

Challenges and Opportunities, April 24, 2017 Santiago, Chile; (4) Huazhong University of Science and Technology, May 14-June 13, 2017; (5) IEEE SMCS (Systems, Man and Cybernetics Society) Workshop on Computational Psychophysiology, Beijing, May 22, 2017; (6) IEEE Technical Activities Board (TAB) Meeting, New Brunswick, USA, June 21-24, 2017; (7) China University of Petroleum, Qingdao, September 09-13, 2017; (8) Chongqing Three Gorges University, September 14-15, 2017; (9) IEEE Technical Activities Board (TAB) Meeting, Phoenix, Arizona, USA, November 15-17, 2017; (10) Administrative Committee Meeting and the Strategic Planning Retreat of the IEEE Computational Intelligence Society, Honolulu, Hawaii, USA, November 30-December 03, 2017; (11) 13th International Conference on Computational Intelligence and Security (CIS2017), Hong Kong, China, December 15-18, 2017; (12) IEEE Technical Activities Board (TAB) Meeting, Orlando, USA, February 14-18, 2018.

Machine Intelligence Unit, Kolkata

Bandyopadhyay, S.:
(1) University of Ljubljana, April 14, 2017; (2) University of Magdeburg, May 10, 2017; (3) Congress on Evolutionary Computation (CEC), San Sebastian, Spain, June 06, 2017.

De, R.K.:
(1) Department of Medicine, University of California, San Diego, USA, since February 06-May 05, 2017 and February 01-April 30, 2018.

Ghosh, A.:
(1) University of Porto, Porto, April 22-May 06, 2017; (2) Yonsei University, South Korea, July, 09-14, 2017; (3) Hongkong Polytechnique University, Hongkong, July, 15-16, 2017; (4) Tribhuvan University, Nepal, December 10-11, 2017; (5) University of Peradeniya, Srilanka, December, 12-13, 2017.

Ghosh, K.:
(1) 2nd Mediterranean Conference on Pattern Recognition and Artificial Intelligence (MedPRAI 2018), Rabat-Kenitra, Morocco, March 27-28, 2018; (2) The 10th International Conference on Advanced Computational Intelligence (ICACI 2018), Xiamen, China, March 29-31, 2018.

Maji, P.:
(1) International Joint Conference on Rough Sets (IJCRS2017), Olsztyn, Poland, July 2017; (2) 9th Asian Conference on Intelligent Information and Database Systems (ACIIDS2017), Kanazawa, Japan, April 03-05, 2017.

Documentation Research and Training Centre, Bangalore

Dutta, B.:
(1) Tallinn University, Tallinn, Estonia, November 02 –December 01, 2017.

Madalli, D.P.:
(1) OECD Global Science Forum Workshop, Brussels, Belgium, April 01–10, 2017; (2) Research Data Alliance Plenary Meeting, Barcelona, Spain, April 01–10, 2017; (3) Expert's Group Giscussion on Agrisemantics, Crete, Greece, May 29-June 04, 2017; (4) UNESCO Workshop on Open Institutional Repositories for Libya, Hammamet, Tunisia, August, 18-25, and November 14-20, 2017; (6) University of Gottingen, Germany, March 18-20 2018; (7) Plenary Meeting of the RDA Technical Advisory Board, Berlin, March 19-23, 2018.

Prasad A.R.D.:
(1) Workshop on Open Harvest, Crete, Greece, May 29-June 04, 2017; (2) UNESCO Workshop on Open Institutional Repositories for Libya, Hammamet, Tunisia, August 18-25, and November 14 – 20,

Editorial and other Assignments

2017; (3) International UDC Seminar on Faceted Classification Today :Theory, Technology and End Users, London, UK, September 12-17 2017; (4) Asian Regional Meeting, Kathmandu, Nepal, December 01-07, 2017.

Systems Science and Informatics Unit, Bangalore

Sagar, B.S.D.:
(1) University of Trento, Italy, May 02-07, 2017; (2) China University of Geosciences, Beijing, China, November 12-17, 2017. (3) Reviewer, PhD Thesis, Multimedia University, Malaysia, 2017; (4) International Workshop on Frontiers in Mathematical Geosciences, Beijing, China, November 13-16, 2017.

Mazumdar, K.:
(1) Department of Epileptology, University of Bonn, Germany, May 29-June 13, 2017.

Computer Science Unit, Chennai

Ghosh, S.:
(1) University of Groningen, Groningen, Netherlands, June 10-July 16, 2017; (2) Member, E.W. Beth Dissertation Prize Committee, 2017; (3) Member, Membership Committee, Association for Symbolic Logic, 2015-2017.

Venkateswarlu, A.:
(1) 10th International Workshop on Coding and Cryptography 2017 (WCC 2017), Saint Petersburg, September 18-22, 2017.

Cryptology and Security Research Unit, Kolkata

Ruj, S.:
(1) NTU, Singapore, April 17-May 16, 2017; (2) University of Ottawa, Canada, September 24-October 05, 2017.

Physics and Earth Sciences Division

Geological Studies Unit, Kolkata

Chakraborty, T.:
(1) Dept. of Archaeology, Jahangirnagar University, Savar, Dhaka, Bangladesh, April 20-May 04, 2017; (2) DGRN, IG, University of Campinas, São Paulo, Brazil, September 03-October 04, 2017; (3) Qingdao National Laboratory for Marine Science and Technology, Qingdao, China, October 28-November 04, 2017.

Ghosh, P.:
(1) 33nd International Meeting of Sedimentology 2017, Toulouse, France and Fieldwork, Zaragoza, Spain, October 10-12, 2017.

Patranobis Deb S.:
(1) Gondwana 16th International Conference, Bangkok, Thailand, November 07-21, 2017.

Physics and Applied Mathematics Unit, Kolkata

Chatterjee, A.:
(1) Workshop on Collider Physics and the Cosmos, Galileo Galilei Institute for Theoretical Physics, Florence, Italy, August 28-September 08, 2017.

Maiti, S.K.:
(1) Department of Chemistry, Tel Aviv University, Israel, August 01-16, 2017; (2) Department of Nanotechnology for Sustainable Energy, School of Science and Technology, Kwansei Gakuin University, Japan, September 05-19, 2017.

Pal, S.:
(1) University of KwaZulu-Natal, Durban, South Africa, November 9-25, 2017.

Roy, B.:
(1) Department of Mathematics, National University of Singapore, Singapore, April 12-18, 2017.

Roy, P.:
(1) Ton Duc Thang University, Ho Chi Minh City, Vietnam, July 09- 22, 2017; (2) Istituto Nazionale Di Fisica Nucleare Sezione Di Perugia, Italy, November 19-December 16, 2017

Biological Sciences Division

Human Genetics Unit, Kolkata

Ghosh, S.:
(1) European Mathematical Genetics Meeting, Tartu, Estonia, April 05-08, 2017; (2) Joint Conference in Biometrics and Biopharmaceutical Statistics, Vienna, Austria, August 27-31, 2017; (3) International Conference in Statistics, Colombo, Sri Lanka, December 27-30, 2017; (4) 7th Pan Arab Human Genetics Conference, Dubai, January 17-20, 2018.

Mukhopadhyay, I.:
(1) Quantitative Methods for Drug Discovery and Development, Singapore, June 02-14, 2017.

Social Sciences Division

Economic Research Unit, Kolkata

Das, S.:
(1) Johann Wolfgang Goethe-Universität Frankfurt am Main, Faculty of Educational Science, Germany, May 25-26, 2017; (2) PEGNet Conference 2017, ETH Zürich, Switzerland, September 11-12, 2017.

Majumder, A.:
(1) 61st ISI World Statistics Congress (WSC) (the biennial flagship conference of the International Statistical Institute (ISI) and its seven associations), Marrakech, Morocco, July 16-21, 2017.

Mitra, M.:
(1) Cardiff Business School, Cardiff University, Cardiff, Wales, UK, July 05-10, 2017; (2) Seoul National University, Seoul, South Korea, February 23-March 03, 2018.

Editorial and other Assignments

Pal, M.:
(1) Central Bank of Sri Lanka, March 31, 2017.

Linguistic Research Unit, Kolkata

Dasgupta, P.:
(1) World Congress of Esperanto, Seoul University of Foreign Studies, Republic of Korea, July 24-31, 2017.

Dash, N.S.:
(1) Dept. of Information and Communication Technology, Bangladesh Computer Council, Govt. of Bangladesh, 2017-2020; (2) External PhD Thesis Examiner, Institute of Uzbek Language, Literature and Folklore: Tashkent State University of Uzbek Language and Literature, Uzbekistan, June, 2017; (3) School of Psychology and Clinical Language Sciences: Centre for Literacy and Multilingualism (CeLM), University of Reading, UK, September 10-23 2017; (4) Dept. of Bangla, Jahangirnagar University, Savar, Dhaka, Bangladesh, December 04-06, 2017; (5) Digital World 2017, Bangladesh Computer Council, Dept. of Information and Communication Technology (ICT), Bangladesh, December 07-08, 2017; (6) System Engineers, Sullivan Hall, Poly Vacher Building, School of Science and Technology, University of Reading, UK, September 20, 2017; (7) Digital World 2017, Bangabandhu International Conference Centre (BICC), Dhaka, Bangladesh, December 07, 2017.

Psychology Research Unit, Kolkata

Chatterjee, G.:
(1) University of Liberal Arts, Dhaka, Bangladesh, February14-16, 2018.

Sampling and Official Statistics Unit, Kolkata

Kar, A.:
(1) UN-ESCAP, Bangkok, Thailand, April 10-13, 2017.

Sociological Research Unit, Giridih

Behera, H.C.:
(1) Member, Coproduction of Sustainable Land System, Global Land Programme, Universitat Bern, Centre for Development and Environment, From 2017.

Economics and Planning Unit, Delhi

Afridi, F.:
(1) Australian Development Economics Workshop, Sydney, June 05–09, 2017; (2) Centre for Global Development Conference, Washington D.C., USA, June 13-16, 2017; (3) University of Pennsylvania and University of Texas, UT-Dallas, September 14-23, 2017.

Bishnu M.:
(1) Australian National University, Canberra, Australia, April 24-May 05, 2017.

Ghate, C.:
(1) Deakin University, Melbourne, Australia, November 14-28, 2017; (2) Royal Institute of International Affairs (Chatham House), Waddesdon Manor, UK, February 02-03, 2018.

Mukhopadhyay, A.:
(1) Department of Economics, University of Connecticut, USA, October 05-17, 2017; (2) Amsterdam Institute for Global Health and Development, Netherlands, November 15-18, 2017.

Mishra, D.:
(1) Brown University and Department of Economics, USA, April 07-14, 2017; (2) Instituto Tecnológico Autónomo de México (ITAM), Mexico, April 15-21, 2017.

Ramaswami, B.:
(1) 11th Annual Meeting, Environment for Development Initiative (EfD), Addis Ababa, Ethiopia, October 26-30, 2017.

Ray, T.:
(1) 18th World Congress of the International Economic Association (IEA) and Centro de Investigacion y Docencia Economicas (CIDE), Mexico, June 19-23, 2017.

Roy Chowdhury, P.:
(1) National University of Singapore, Singapore, November 13-24, 2017.

Sen, A.:
(1) Higher School of Economics, National Research University, Moscow, Russia, April 10-23, 2017; (2) Singapore Management University, Singapore, April 29-May 06, 2017; (3) University of Padua, Department of Economics and Management, Italy, June 03-16, 2017; (4) University of Lausanne, Switzerland, September 14-17, 2017.

Somanathan, E.:
(1) Tufts University, USA, July 17-22 2017; (2) 11th Annual Meeting, Environment for Development Initiative (EfD), Addis Ababa, Ethiopia, October 26-30, 2017; (3) REDD+ SANDEE Workshop, Kathmandu, Nepal, December 06-12, 2017; (4) SANDEE Steering Committee Meeting and 34th Biannual Research and Training Workshop, Kathmandu Nepal, December 13-15, 2017.

Economics Analysis Unit, Bangalore

Rajashekara, H.M.:
(1) IEEE International Geoscience and Remote Sensing Symposium 2017, Fort Worth, Texas, USA, July 23-28, 2017.

Swaminathan, M.:
(1) Agriculture, Nutrition and Health Scientific Symposium and Academy Week, Kathmandu, Nepal, July 8, 2017; (2) University of Pretoria, Pretoria, South Africa, July 17-21, 2017; (3) Global Youth Institute, Borlaung Dialogues USA, October 17–25, 2017; (4) University of Wageningen, Wageningen, Netherlands, March 06-08, 2018.

Statistical Quality Control and Operations Research Division

SQC & OR Unit, Delhi

Neogy, S.K.:
(1) 28th International Conference on Game Theory, Stony Brook, USA, July 17-21, 2017.

Editorial and other Assignments

SQC & OR Unit, Bangalore

Perumallu, P.K.:
(1) ST Microelectronics Company, Italy, May 10-17, 2017; (2) Samara Cable company, Russia, June 01-02, 2017; (3) ST Microelectronics Company, Malaysia, June 13-15, 2017; (4) HP Pelzer Company, USA, September 20-27, 2017.

Ray, S.:
(1) Du, Dubai, April 03-07, 2017; May 22-26, 2017; July 31-August 04, 2017 and October 03-06, 2017.

SQC & OR Unit, Mumbai

Sarkar, A.:
(1) M/s Tanfeeth, Dubai, July 30-August 04, 2017.

Center for Soft Computing Research, Kolkata

Ghosh, K.:
(1) 24th International Conference on Neural Information Processing (ICONIP 2017), Guangzhou, China. November 14-18, 2017.

Pal S.K.:
(1) Hong Kong Baptist University, Hong Kong and Guangdong University of Technology, China, May 13-21, 2017; (2) University of Warmia and Mazury, Olsztyn, Poland, June 30-July 07, 2017; (3) University of Naples, Parthenope, Naples, and University of Genoa, Italy, November 19-27, 2017.

SCIENTIFIC ASSIGNMENTS/ ACADEMIC VISITS IN INDIA

Theoretical Statistics and Mathematics Division

Stat-Math Unit, Kolkata

Biswas, K.:
(1) IISER, Pune, July 24-29, 2017; (2) ICTS, Bangalore, November 27-30, 2017.

Bandyopadhyay, P.:
(1) RIE, Mysore, May 18-21, 2017; (2) Visvesvaraya Technological University, Belagavi. June 22-26, 2017; (3) IIT, Bombay, October 11-15, 2017.

Dutta, A.K.:
(1) Ramakrishna Mission Institute of Culture, April 08, 22, 25, 29, and May 06, 11-13, 16, 20, 23-24, 26, 2017; (2) Jadavpur University, Kolkata, July 10, 2017; (3) Dept. of Statistics and Informatics, Aliah University, Kolkata October 16, 2017; (4) IIT Gandhinagar, December 04-05, 2017; (5) Indian Association for the Cultivation of Science, Kolkata, February 28, 2018; (6) IGNCA, New Delhi, March 06, 2018.

Datta, M.:
(1) NISER, Bhubaneswar, July 10-22, 2017; (2) ICTS, Bengaluru, December 25, 2017-January 04, 2018; (3) IISER, Kolkata, March 15, 2018.

Gupta, N.:
(1) DEFRAG, Birla Institute of Technology, Pilani, February 22; (2) 2018DMS symposium, Kolkata, March 05, 2018.

Ray, S K.:
(1) IIT, Patna, May 14-15, 2017; (2) IISc, Bangalore, December 11-13, 2017; (3) NISER, Bhubaneswar, March 05 -08, 2018; (4) IIT, Bombay, March 18 -23, 2018.

Stat-Math Unit, Delhi

Bhatt, A G:
(1) IGIDR, Mumbai, September 01-03, 2017; (2) IISA International Conference on Statistics, Hyderabad, December 28 – 29, 2017.

Dewan, I:
(1) Annual Conference of International Indian Statistical Association, Hyderabad, December 27-30, 2017; (2) IITRAM, Ahmedabad, February 01-05, 2018.

Jain, T:
(1) Department of Mathematics, University of Delhi, May 01- 02, 2017; (2) Indian Academy of Science, Bangalore, September 06, 2017; (3) Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, November 30-December 02, 2017.

Laishram, S:
(1) Ramjas College, Delhi University, April 26-28, 2017; (2) North-Eastern Hill University, Shillong, June 30-July 07, 2017; (3) University of Hyderabad, July 28-August 01, 2017; (4) Harish-Chandra Research Institute, Allahabad, September 04-07, 2017; (5) IIT, Delhi, December 11-16, 2017; (6) IIT Ropar, December 22-25, 2017; (7) NISER, Bhubaneswar, February 08-09, 2018; (8) Kerala School of Mathematics, Manipur University, Imphal, February 26-March 03, 2018; (9) University of Hyderabad, March 19-20, 2018.

Nandi, S:
(1) IISA International Conference on Statistics, Hyderabad, December 27-30, 2017; (3) IIT, Kanpur, February 18-20, 2018.

Sarkar, A:
(1) IISC, Bangalore, January 08-12, 2018.

Sarkar, D:
(1) IGIDR, Mumbai, September 01-03, 2017.

Thakur, M:
(1) IISER, Mohali, December 18- 23, 2017.

Stat-Math Unit, Bangalore

Rajarama Bhat, B.V.:
(1) Indian Women and Mathematics Conference, IISc, Bangalore, July 13-15, 2017; (2) Conference on Functional Analysis, IIT, Bombay, October 12-15, 2017; (3) Nominee of UGC (for FIST funding

evaluation), Alagappa University, Karaikudi, Tamil Nadu, November 21, 2017; (4) Conference on Matrix and Functional analysis, NIT, Jalandhar, November 30-December 02, 2017; (5) Linear Algebra Conference (ICLAA 2017), Manipal Academy of Higher Education, Manipal, December 11-15, 2017; (6) St. Aloysius College, Mangalore, December 13, 2017; (7) Delhi University, Delhi, December 18-21, 2017; (8) INSPIRE Selection Committee Meeting (Mathematics), INSA, New Delhi, December 21, 2017; (9) 83rd Anniversary General Meeting of the Indian National Science Academy, IISER, Pune, December 27-29, 2017; (10) Conference on Quantum Groups and Noncommutative Geometry, NISER, Bhubaneswar, January 15-19, 2018; (11) National Conference on 'Advances in Applied Mathematics', Department of Mathematics, University College of Science, Tumkur University, Tumakuru, Karnataka, February 08, 2018; (12) National Seminar on Recent Advances in Complex Analysis and Operator Theory, Jammu University, Jammu, February 15-17, 2018; (13) Star College Scheme Mentoring Meeting of PSG College of Arts and Science, Coimbatore, February 21, 2018.

Raja, C.R.E:
(1) TIFR, Mumbai, April 10-14, 2017; (2) Topological Dynamics in Advanced Instructional School (AIS) on Ergodic Theory and Dynamical Systems (ETDS), IIT, Delhi, December 06-09, 2017.

Rajeev, B.:
(1) Annual Conference of Kerala Statistical Association, Department of Statistics, St. Thomas' College, Thrissur, February 14-17, 2018.

Sarkar, J:
(1) Department of Mathematical Sciences, BHU, Varanasi, May 13-14, 2017; (2) North-East Summer Workshop in Analysis and Probability (NE-SWAP), Manipur University, July 05-11, 2017; (3) Conference on Functional Analysis, IIT, Bombay, October 10-15, 2017; (4) Department of Mathematical Sciences, IISER, Kolkata, November 16-18, 2017; (5) Conference on Matrix and Functional Analysis, NIT, Jalandhar, November 28-December 03, 2017; (6) Conference on Recent Advances in Operator Semigroups, University of Delhi, Delhi, December 18-22, 2017; (7) Conference on Quantum Groups and Noncommutative Geometry, National Institute of Science Education and Research (NISER), Bhubaneswar, January 14-20, 2018; (8) Conference on Recent Advances in Complex Analysis and Operator Theory, Jammu Mathematical Society and University of Jammu, Jammu, February 14-18, 2018; (9) Himachal Pradesh University, Shimla, February 27-March 01, 2018; (10) IIT, Bombay, Mumbai, March 21-23, 2018.

Yogeshwaran, D.:
(1) Annual Meeting, Indian Academy of Sciences, Shillong, November 03-05, 2017.

Applied Statistics Division

Applied Statistics Unit, Kolkata

Dewanji, A.:
(1) IISA International Conference on Statistics 2017, Hyderabad, December 27-30, 2017; (2) International Conference on New Paradigms in Statistics for Scientific & Industrial Research organized jointly by IAPQR and CSIR-CGCRI, Kolkata, January 04-06, 2018.

Interdisciplinary Statistical Research Unit, Kolkata

Basu, A.:
(1) 3rd International Conference on Statistics for 21st Century, University of Kerala, Trivandrum, December 13-16, 2017; (2) International Indian Statistical Association (IISA) 2017 Annual Conference on Statistics, India International Centre, Hyderabad, December 26-31, 2017.

Ghosh, A.:
(1) Indraprastha Institute of Information Technology, Delhi, October 09-16, 2017; (2) 83rd Annual Conference of Indian Mathematical Society (IMS), Sri Venkateswara University, Tirupati, December 10-17, 2017; (3) International Indian Statistical Association (IISA) International Conference on Statistics, Hyderabad, December 27-31, 2017.

Pal, A.:
(1) National Conference for Women in Statistics and Analytics, Department of Statistics, Savitribai Phule Pune University, Pune, February 14-16, 2018.

Applied Statistics Unit, Chennai

Sudheesh, K.K.:
(1) Velammal College of Engineering and Technology, Madurai, April 04, 2017; (2) Anna Institute of Management, Chennai, Tamil Nadu, India, April 24-25 and 28, 2017; (3) 32nd Annual Conference of the RMS, Belagavi, Karnataka, June 24, 2017; (4) CUSAT, Kochi, Kerala, August 30, 2017; (5) University of Hyderabad, October 16, 2017; (6) Maharajas College, Ernakulam, December 08, 2017; (7) Workshop Statistical Methods in Finance 2017, Chennai Mathematical Institute, Chennai, December 16-19, 2017; (8) IISA Conference, Hyderabad, December 28-30, 2017.

Applied and Official Statistics Unit, Tezpur

Chungkham, H.S.:
(1) 2017 IISA International Conference on Statistics, Hyderabad, December 28-30, 2017.

Jyethi, D.S.:
(1) NASA Applied Remote Sensing Training, IITM, MoES, Pune, May 23-26, 2017; (2) 2nd International Workshop on Biodiversity and Climate Change, IIT Kharagpur, February 24-27, 2018; (3) Contributor of self-learning materials, Centre for Open and Distance Learning, Tezpur University, 2018.

Maitra, S.:
(1) Faculty Development Program, KIIT University, Bhubaneshwar, June 28-29, 2017; (2) Faculty Development Program, Department of Computer Science and Engineering, Tezpur University, Tezpur, December 27-28, 2017; (3) Training and Placement Cell, School of Engineering, Tezpur University, Tezpur, February 14-March 07, 2018.

Ramesh, A.:
(1) 35th Annual National Conference of Indian Society for Medical Statistics, Lucknow, Uttar Pradesh, November 02-04, 2017.

Computer and Communication Sciences Division

Advanced Computing and Microelectronics Unit, Kolkata

Das, N:
(1) 29th GISFI Standardization Series Meeting and IEEE 5G Summit, Bhubaneswar, August 17 -18, 2017; (2) 19th International Conference on Distributed Computing and Networking (ICDCN '18), IIT, BHU, January 04-07, 2018; (3) 5th International Doctoral Symposium on Applied Computation and Security Systems (ACSS-2018), Kolkata, February 09-10, 2018.

Editorial and other Assignments

Sur-Kolay, S.:
(1) 9th International Conference on Reversible Computation, Kolkata, July 06-07, 2017; (2) 31st International Conference on VLSI Design, Pune, January 09-11, 2018; (3) Conference on Algorithms and Applications (ALAP2018), B.P. Poddar Institute of Management & Technology, Kolkata, January 10-12, 2018; (4) IEEE International Symposium on Devices, Circuits and Systems (ISDCS 2018), IIEST, Shibpur, India, March 30-31, 2018.

Computer Vision and Pattern Recognition Unit, Kolkata

Bhattacharya, U.:
(1) Invited talk, Master of Human Resource Department (MHRM), Indian Institute of Social Welfare and Business Management, Kolkata, February 09, 2018; (2) Workshop on Deep Learning and Application, NIT, Manipur, March 12-16, 2018.

Majumdar, D.:
(1) Visiting Professor, Ashoka University, Rajiv Gandhi Education City, Sonipat, Haryana, September 22–December 19, 2017 & January 04–March 09, 2018.

Mitra, M.:
(1) Invited talk, Department of Computer Science, Calcutta University, July 04, 2017; (2) Doctoral Committee Meeting, Department of Information Technology, IIEST, Shibpur, July 31, & September 05, 2017; (3) Department of Statistics, Calcutta University, March 17, 2018.

Electronics and Communication Sciences Unit, Kolkata

Chanda, B.:
(1) Faculty Development Programme on Big Data Analystics and Machine Learning, Techno India, Salt Lake, July 06, 2017; (2) AICTE-QIP Short Term Course on Biomedical Data Analytics (BioMedicS-2017), IIT, Kharagpur, September 11-17, 2017; (3) AICTE sponsored Faculty Development Programme on Recent Developments in Artificial Intelligence and Robotics, 2017; (4) Narula Institute of Technology, Agarpara, January 03-13, 2018; (6) 3rd Workshop on Computing: Theory and Applications, NIT, Meghalaya, February 19-24, 2018; (7) IIIT, Allahabad, March 21-22, 2018.

Das, S.:
(1) Workshop on Intelligent Signal processing and Control system Design using Bio inspired Algorithms, NIT, Warangal, May 22–31, 2017; (2) 7th International Conference Soft Computing for Problem Solving-SocProS 2017, IIT, Bhubaneswar, December 23-24, 2017; (3) IEEE CIS Winter School, Department of Electrical Engineering, IIT, Delhi, December 27–31, 2017; (4) Workshop on Swarm and Evolutionary Computation, Department of Mathematics, IIT, Roorkee, March 17–19, 2018.

Mohanta, P.P.:
(1) 3rd Workshop on Computing: Theory and Applications, NIT, Meghalaya, Shillong, February 19–24, 2018.

Mukherjee, D.P.:
(1) Medical Image Processing, Department of Computer Science and Engineering, Tripura University, May 05, 2017; (2) Machine Learning, Capital One, Bangalore, June 20-21, 2017; (3) Machine Learning, UGC Workshop on Big Data Analytics, Bir Bikram Memorial College, Tripura, July 16, 2017; (4) Emotion Recognition and Synthesis, Short term course on Biometrics, NIT, Durgapur, August 07, 2017; (5) Tutorial on Image Processing, SIAM Workshop, VIT Vellore September 09, 2017; (6) Shape Synthesis, IIIT Sri City, Chittor, September 11, 2017; (7) Machine Learning for Computer Vision,

Ahmedabad University, September 20, 2017; (8) Machine Learning, Department of Computer Science and Engineering, Tripura University, November 04-05, 2017; (9) Introduction to Machine Learning, Narula Institute of Technology, January 03, 2018; (10) Tutorial on Machine Learning, CSI-2017, University of Calcutta, January 18, 2018; (11) ICICA-2018, Velammal Engineering College, Chennai, February 03, 2018; (12) Department of Statistics, University of Calcutta, March 16, 2018; (13) CSI-B.P. Poddar College of Engineering Workshop, March 20, 2018.

Pal, N.R:
(1) International Conference on Computational Intelligence: Theories, Applications and Future Directions, Indian Institute of Technology Kanpur, December 06-08, 2017.

Machine Intelligence Unit, Kolkata

Bandyopadhyay, S.:
(1) Welcome Trust/DBT-India Alliance Early Career Fellowships Selection Committee, 2013-2014 and 2015-2017; (2) Board of Governors, NIT Agartala, 2017-19; (3) Council of Management, NIAS, Bangalore, 2017-18; (4) National Panel for the Formulation of the Technology-led Innovation Policy, 2017-18; (5) Committee to review Policy Research Programme of DST for its Continuation Beyond the 12th Plan Period Chairperson, 2017-18; (6) Program Advisory Committee (PAC) of Electrical, Electronics and Computer Science, SERB, 2015-18; (7) Program Advisory Committee (PAC) of Women Scientist Scheme (A), DST, 2016-19; (8) Selection Committee of Swarnajayanti Fellowship, DST, 2015-18.

Ghosh, A:
(1) 5th IIMA International Conference on Advanced Data Analysis, Business Analytics and Intelligence, Ahmedabad, April 08-09, 2017; (2) National Workshop On Remote Sensing And Signal Processing, Guwahati, Assam, May 15-16, 2017; (3) International Conference On Communication, Devices and Networking, Sikkim, June 03-05, 2017; (4) B.P Poddar College, Kolkata, August 09, 2017; (5) Workshop on Big Data Analytics, Bangalore, August, 24, 2017; (6) Coimbatore University, Coimbatore, August 27-28, 2017; (7) DST Meeting, New Delhi, September 25, 2017 (8) IISc Bangalore, October 03, 2017; (9) IISF, Ministry of Arts and Sciences, Delhi, October 16, 2017; (10) Latest Advances in Machine Learning and Data Science, October 25-26, 2017; (11) DST meeting, IIT, Kharagpur, November 04, 2017; (12) RCCIIT, Kolkata, November 08, 2017; (13) Kalinga Institute Of Industrial Technology, Bhubaneswar, November 16, 2017; (14) Chandaben Mohanbhai Patel Institute of Computer Applications, December 01, 2017; (15) DEITY Meeting, New Delhi, December 08, 2017 and January 18, 2018; (16) NIT, Silchar, Silchar, January 22, 2018; (17) Pune University, Pune, February 05, 2018; (18) NIT, Bhopal, February 06-07, 2018; (19) 4th International Conference on Harmony Search, Soft Computing And Applications, Gurgaon, Harayana, February 08, 2018.

Ghosh, K.:
(1) MCA Major Project Viva-Voce, Department of Computer Applications, NEHU, Meghalaya, July 11-12, 2017; (2) ISEA Sponsored Short Term Course on Biometrics, NIT, Durgapur, August 07-11, 2017; (3) Symposium on 150th Birth Anniversary of Madam Curie, Vivekananda College, Kolkata, November 01, 2017; (4) 3rd Workshop on Computing: Theory and Applications, NIT, Meghalaya, February 19-24, 2018.

Maji, P.:
(1) Workshop on Machine Learning and Pattern Analysis, St. Thomas College of Engineering and Technology, Kolkata, June 2017; (2) Short Term Course on Machine Learning in Computer Vision and Pattern Recognition, NIT, Durgapur, February 2018; (3) International Conference on the Networked Digital Earth, Kharagpur, March 2018.

Editorial and other Assignments

Mitra, S.:
(1) Member, Board of Studies, Dept. of Computer Science & Engineering, Tezpur University, 2017-18; (2) Member, Board of Studies, Dept. of Information Technology, Govt. College of Engineering and Ceramic Technology, Kolkata, 2017-18; (3) Member, PG Board of Studies, Surendranath College, 2018; (4) Chair, IEEE CIS Kolkata Chapter, 2017-18; (5) Short Term Training Program, Nirma University, Ahmedabad, July 01, 2017; (6) Faculty Development Program, RCCIIT, Kolkata, July 20, 2017; (7) INAE Youth Conclave, Jaipur, August 12, 2017; (8) 2nd International Conference on Applied Soft Computing and Communication Networks (ACN'17), Manipal, September 13, 2017; (8) 1st International Symposium on Signal and Image Processing (ISSIP 2017), CII Suresh Neotia Centre of Excellence for Leadership, Kolkata, November 01, 2017; (10) Expert in Brain Storming Session on NPIS, MeitY, New Delhi, December 08, 2017; (11) Expert in Brain Storming Session for AI meeting, MeitY, New DelhiJanuary 18, 2018.

Systems Science and Informatics Unit, Bangalore

Meher, S.K:
(1) Faculty Development Program, School of Computer Science, Kalinga Institute of Industrial Technology, Bhubaneswar, Odisha, June-28-30, 2017; (2) Amrita School of Engineering, Bangalore Campus, July 06-09, 2017; (3) International Conference on Computing, Analytics and Networking (ICCAN-2017), School of Computer Science, Kalinga Institute of Industrial Technology, Bhubaneswar, Odisha, December 15-16, 2017; (4) International conference on current trends in advanced computing (ICCTAC), Kristu Jayanti College, Bangalore, India, February 01-02, 2018.

Sagar, B.S.D:
(1) IIT, Bombay, 2017-18; (2) University of Hyderabad, 2017-18; (3) Indian Institute of Space Science and Technology, Trivandrum, 2017-18; (4) Nirma University, Ahmadabad, June 28, 2017; (5) IEEE Bombay GRSS Chapter, IIT, Bombay, July 19, 2017; (6) Centre for Artificial Intelligence and Robotics (CAIR) Defense Research and Development Organisation, Bangalore, November 22, 2017.

Computer Science Unit, Chennai

Francis, M.C.:
(1) ADMA Pre-conference Workshop on Graph Algorithms, SSN College of Engineering, Chennai, June 05, 2017; (2) IIT, Palakkad, January-April, 2018; (3) Department of Computer Science & Engineering, IIT, Kharagpur, February 04-11, 2018; (4) SRM Institute of Science and Technology, Chennai, February 14, 2018; (5) National Workshop on Graph Coloring and Algebraic Graph Theory, Pondicherry University, March 06, 2018.

Karthick, T.:
(2) 13th Pre-conference school on Graph Algorithms, SSN College of Engineering, Chennai, June 05–07, 2017; (1) Department of Mathematics, VIT University, Chennai, October 11, 2017; (3) International Conference in Discrete Mathematics (ICDM-2018), Periyar University, Salem, January 04-07, 2018; (4) International Conference in Discrete Mathematics and its Applications, Manonmaniam Sundaranar University, Tirunelveli, January 18-20, 2018; (5) State Level Intercollegiate Student Seminar, PG and Research Department of Mathematics, Thiagarajar College, Madurai, February 23, 2018; (6) National Workshop on Graph Coloring and Algebraic Graph Theory, Pondicherry University, Pondicherry, March 06-10, 2018.

Physics and Earth Sciences Division

Geological Studies Unit, Kolkata

Das, S.S.:
(1) National Seminar on Deccan Volcanism and biotic events across K/T boundary, Department of Applied Geology Dr. H.S. Gour Vishwavidyalaya , Sagar, Madhya Pradesh, October 26-28, 2017.

Sengupta, D.P.:
(1) Presidency University, Kolkata, October 25, 2017; (2) Joint Technical Session of Association of Petroleum Geologists (APG) and Society of Petroleum Geophysicist (SPG), Kolkata Chapter, ONGC, March 19, 2018.

Physics and Applied Mathematics Unit, Kolkata

Kar, G.:
(1) Department of Physics, NIT, Patna, January 23-27 and November 02-09, 2017; (2) International Conference an invited speaker on Quantum Foundations 2017 (ICQF17), NIT, Patna, December 04-09, 2017; (3) International Symposium an invited speaker on New frontiers in quantum correlations (ISNFQC18), S.N. Bose National Centre for Basic Sciences, Kolkata, January 29-February 02, 2018.

Maiti, S.K.:
(1) National Conference on Recent Trends in Condensed Matter Physics, Bose Institute, Kolkata, October 31-November 03, 2017; (2) National Conference on Frontiers of Statistical Physics, Presidency University, Kolkata, February 28, 2018.

Pal, S.:
1) National Workshop on Celebrating the Centenary of Einstein's General Relativity, Burdwan University, July 26-Aug 01, 2017; (2) International Conference on Post-Planck Cosmology: Enigma, Challenges and Vision, IUCAA Pune, October 09-11, 2017; (3) Invited Member of Judges Panel for Scientific Creativity Test, Jagadis Bose National Science Talent Search (JBNSTS), October 13-15, 2017; (4) External Examiner, Indian Association for the Cultivation of Science, January 30, 2018; (5) Moderator, St. Xaviers' College, Kolkata, 2017-18; (6) Viva-voce Examiner, S.N. Bose National Centre for Basic Sciences, Kolkata, 2017.

Parashar, P.:
(1) International Symposium on New Frontiers of Quantum Correlations, S.N. Bose National Centre for Basic Sciences, Kolkata, January 29-February 02, 2018.

Roy, B.:
(1) Department of Physics, Punjab University, Chandigarh, December 05-13, 2017.

Biological Sciences Division

Human Genetics Unit, Kolkata

Chatterjee, R.:
(1) National Workshop on Microbial Genomics, Department of Biotechnology, Mizoram University, Aizwal, October 29-November 02, 2017; (2) International Conference Advances in Biological Techniques, Raja Peary Mohan College, Uttarpara, Hoogly, November 02-04, 2017; (3) 37th Annual Conference of the Indian Association for Cancer Research (IACR), Bose Institute, Kolkata,

Editorial and other Assignments

February 23 -25, 2018; (4) 43rd Annual Meeting of the Indian Society of Human Genetics (ISHG), CSIR-Centre for Cellular and Molecular Biology, Hyderabad, March 12-15, 2018.

Ghosh, S.:
(1) Workshop on Consortium on Vulnerability to Externalizing Disorders and Addictions (cVEDA) National Institute of Mental Health and Neurosciences, Bangalore, January 22-24, 2018.

Mukhopadhyay, I.:
(1) East Asia Regional Conference of International Biometric Society, Puducherry, February 16-17, 2018; (2) National Conference on Mathematical and Theoretical Biology (NCMTB 2018), March 22-23, 2018.

Social Sciences Division

Economic Research Unit, Kolkata

Chakravarty, S.R.:
(1) Indira Gandhi Institute of Development Research, Mumbai, March 25-31, 2018.

Kabiraj, T.:
(1) Guest Professor, Economics Department, Calcutta University, April-May 2017 and February-March 2018; (2) External Expert, IIT, Kharagpur, May 04-05, 2017; (3) Research Methodology Workshop on Economic Theory, Visva-Bharati University, November 12-13, 2017; (4) International Conference on Issues in Economic Theory and Policy, Presidency University, Kolkata, December 14, 2017.

Majumder, A.:
(1) Board of Studies, Department of Economics, Presidency University, Since 2016; (2) IIT, Kharagpur, May 04-05, 2017; (3) NIT, Durgapur, Department of Humanities & Social Sciences, June 28, 2017.

Pal, M.:
(1) North Eastern Hill University, Shillong, Meghalaya, July 13, and 20 September 20, 2017; (2) Nabagram Hiralal Paul College, November 24, 2017; (3) Xavier University Bhubaneswar, August 02, September 11-14, October 08-18, November 01-09, 2017; (4) Research Advisory Committee of National Tea Research Foundation, 2018-19.

Sarkar, N.:
(1) The WB National University of Juridical Sciences, Kolkata, April 02, 2017 and March 05, 2018; (2) Assam University, Silchar, Assam, January 11-12, 2018; (3) West Bengal State University, Barasat, West Bengal, March 05, 2018; (4) The Bhawanipur Education Society College, Kolkata, March 19, 2018.

Linguistic Research Unit, Kolkata

Dasgupta, P.:
(1) National Seminar on Multilingualism in India: Issues and Challenges, Department of Linguistics, University of Mumbai, Mumbai, March 06-07, 2018.

Dash, N.S.:
(1) Finalization of consolidated report on mother tongue Amarani and Konda, Office of the Registrar General-India, Language Division, Ministry of Home Affairs, Govt. of India, Kolkata, April & July,2017; (2) Dept. of English and Foreign Languages, Tezpur University, Assam, May 19, 2017; (3) English and Foreign Languages University, Hyderabad, May 24, 2017; (4) School of Languages and Linguistics, Jadavpur University, Kolkata, May 28, June 25 & 29, 2017; (5) 23rd Himalayan Languages Symposium, Dept. of English and Foreign Languages, School of Humanities & Social Sciences, Tezpur University, Assam, July 05-07, 2017; (6) Dept. of Linguistics, Faculty of Arts, Banaras Hindu University, Varanasi, July 31, & November, 2017; (7) Translation Today: An International Journal on Translation, Paper Reviewer, August 2017; (8) Workshop on Language-Mind-Brain: Interface Studies, Humanities and Social Sciences Department, IIT, Patna, August 19-20, 2017; (9) Training Programme on Mother Tongue Survey of India (MTSI), Office of the Registrar General, Ministry of Home Affairs, Govt. of India, Kolkata, August 22-31, 2017; (10) MTIL-2017, Amrita Vishwa Vidyapeetham, Coimbatore, September 07-08, 2017; (12) Machine Translation in Indian Languages (MTIL), Amrita Vishwa Vidyapeetham, Coimbatore, September 07-08, 2017; (12) Department of Linguistics and Phonetics, School of Language Sciences, English and Foreign Languages University, Hyderabad, October, 2017; (13) Workshop on Describing and Analyzing Languages and Hands-on Training in Linguistic Tools, Dept. of English, Jadavpur University, Kolkata, November 15-16, 2017; (14) National Seminar on Applied Linguistics, Dept. of Linguistics, Osmania University, Hyderabad, November 28, 2017; (15) Workshop on Current Trends in Field Linguistics, Dept. of Linguistics, Osmania University, Hyderabad, November 29, 2017; (16) 39th International Conference of the Linguistic Society of India, Department of Humanities and Social Sciences, IIT, Patna, India, December 08-11, 2017; (17) 39th International Conference of Linguistic Society of India (ICOLSI-39), Dept. of Humanities and Social Sciences, IIT, Patna, December 10, 2017;(18) Translation Today: An International Journal on Translation, Paper Reviewer, December 2017; (19) International Workshop on Methodological Approach to Research in Humanities, Dept. of Bangla, Aliah University, Kolkata, January 01, 2018; (20) 13th International Conference of South Asian Languages and Literatures, Central Institute of Indian Languages, Mysore, January 08-10, 2018; (21) Lipi and Literature 2018 Festival, Dept. of Odia, Ravenshaw University, Cuttack, February 03, 2018; (22) Pre-Submission Seminar for PhD, Dept. of Computer Science and Engineering, Jadavpur University, Kolkata, February 05, 2018; (23) Collection of sentences from Kurdmali and Birhor speech communities in the districts of Purulia, West Bengal, February 20-23, 2018; (24) 6th International Conference on Endangered and Lesser Known Languages, Central Institute of Indian Languages, Mysore, February 21-23, 2018; (25) Seminar cum workshop on Endangered Languages and Language Documentation in India, Dept. of Linguistics, University of Calcutta, February 28, 2018; (26) Central Institute of Indian Languages, Mysore, March 07-09, 2018; (27) Translation and Knowledge Society - A Conference, Workshop and Translation, NTM, CIIL, Mysore, March 07-09, 2018; (28) 8th National Conference on Indian Language Computing, Department of Computer Applications, CUSAT, Kochi, March 16-17, 2018.

Psychology Research Unit, Kolkata

Bhattacharya, H.:
(1) 7th InSPA International Conference, Mysore, November 09-11, 2017.

Chatterjee, G.:
(1) Panjabi University, Patiala, Punjab, December 04-06, 2017; (2) Indian Institute of Science, Bangalore, December 27-29, 2017; (3) HBCSE, TIFR, Maharashtra, February 26-28, 2018.

Dutta Roy, D.:
(1) Centre for Science of Student Learning, Delhi, August 01-September 31, 2017; (2) University of Calcutta, Kolkata, August 04, & 07-08, 2017; (3) Indian Institute of Psychometry, Kolkata, August 24, 2017; (4) Ali Yavar Jung National Institute of Speech and Hearing Disabilities, Kolkata, August 29-September 06, 2017; (5) Department of Psychology, University of Calcutta, Kolkata, September 08-09, 2017; (6), IAHP, Lucknow, November 11, 2017; (7) Centre for Health Psychology, School of

Editorial and other Assignments

Medical Sciences, University of Hyderabad, November 27, 2017; (8) NAOP, IIT, Kharagpur, December 21-24, 2017; (9) P.G. College, Chandigarh, January 12-14, 2018; (12) NIEPID, Kolkata, January 30, 2018.

Sampling and Official Statistics Unit, Kolkata

Chakraborty, A.B.:
(1) Advisory Committee, National Accounts Statistics, Govt. of India, Ministry of Statistics and Programme Implementation (MOSPI), Since June 2016; (2) Working Group on Producer Price Index, Govt. of India, Ministry of Commerce and Industry, 2014-17.

Chattopadhyay, N.:
(1) Working group for the 73rd Round of National Sample Survey, NSSO, Since 2014.

Chaudhury, P.:
(1) Working Group for the 75th Round of the National Sample Survey, NSSO, MoS&PI. During 2017-18.

Dihidar, K:
(1) Assessor, Kalyani University, 2017.

Kar, A:
(1) Technical consultancy for the NABARD All India Rural Financial Inclusion Survey (NAFIS), June 2016-July 2018; (2) Member of the Committee on Real Sector Statistics constituted by the National Statistical Commission April 2016-July 2018; (3) Member of the Working Group on NSS 73rd Round of Ministry of Statistics and Programme Implementation, Govt. of India August 2014-March 2018; (4) Member of the Working Group on NSS 74th Round Ministry of Statistics and Programme Implementation, Govt. of India, Since October 2015.

Mitra, S.:
(1) International Conference on Public Policy and Management, Centre for Public Policy, Indian Institute of Management, Bangalore, August 07-08, 2017; (2) IFMR-Tamil Nadu Government Conference, September 07, 2017.

Mukherjee, D.:
(1) Working Group for the 74th round of NSS, NSSO, since 2015; (2) Studies in Microeconomics, India, Since 2015; (3) Expert Committee on Disclosure Control, NSSO, Since 2015.

Sociological Research Unit, Kolkata

Bharati, S:
(1) 105th Indian Science Congress, Manipur University, Imphal, March 16-20, 2018.

Jana, R.:
(1) Faculty Centre for Integrated Rural Development and Management (IRDM), Ramakrishna Mission Vivekananda University (RKMVU), Narendrapur, West Bengal, Since 2012.

Economics and Planning Unit, Delhi

Afridi, F.:
(1) IGC Conference, Delhi, July 13, 2017; (2) Indian School of Business, Human Capital Workshop, Hyderabad, August 10-11, 2017; (3) Mumbai School of Economics, December 16, 2017; (4) Australia-India Workshop, Delhi, December 21, 2017; (5) IIM Kolkata, CSSSC, Kolkata, January 10-12, 2018.

Bishnu M.:
(1) CECFEE Annual Workshop, Udaipur, Rajasthan, November 16-17, 2017.

Ghate, C:
(1) Board of Studies, Department of Economics, Shiv Nadar University, Dadri, Uttar Pradesh, March 2018 onwards; (2) RBI, Mumbai, April 05-06, June 05-07, 23, July 17-18, July 31- August 02, 31, September 08, October 03-04, December 05-06, 2017; (4) 11th Statistics Day Conference, Reserve Bank of India, July 04, 2017; (5) CAFRAL, RBI, Mumbai, Seminars presentation, December 07, 2017; (6) Training programme on Macroeconmics, RBI Mumbai, December 08-14, 2017; (7) International Conference on Economics and Finance, BITS – Pilani, Goa Campus, February 16-17, 2018; (8) Economic Theory and Policy Conference Centre for Development Studies, Thiruvananthapuram, February 22-23, 2018; (9) International Conference on Globalization and Development, Department of Economics & Politics, Visva-Bharati Santiniketan, February 24, 2018; (10) Presidency University, Calcutta, February 27, 2018; (11) IIM, Kolkata, February 26, 2018.

Mishra, D.:
(1) IIM Bangalore, January 12, 2017.

Ramaswami, B.:
(1) Symposium, IGIDR, December 08, 2017.

Ray, T.:
(1) Ashoka University, Sonepat, Haryana, July 28-29, 2017; (2) IEA-IGIDR Conference on Social Sector Development in India: Emerging Issues and Policy Perspectives, Indira Gandhi Institute of Development Research, Mumbai, October 06-07, 2017; (3) St. Stephen's College, University of Delhi, September 15, 2017; (4) National University of Educational Planning and Administration (NUEPA), New Delhi, March 05, 2018.

Roy Chowdhury, P.:
(1) International Conference on 'Globalization and Development', Visva-Bharati, Santiniketan, February 23-25, 2018.

Somanathan, E.:
(1) Ashoka University, SERI conference, July 28-29, 2017; (2) Madhya Pradesh, August 03-04, 2017; (3) IISER, Bhopal, August 05, 2017; (4) Eastern UP, October 12-13, 2017; (5) InSEE Conference, Thrissur, Kerala, November 07-08, 2017; (6) Amrita University, Coimbatore, Tamil Nadu, November 09, 2017; (7) CECFEE Workshop, Udaipur, Rajasthan, November 17-18, 2017.

Economic Analysis Unit, Bangalore

Swaminathan, M.:
(1) Selection of Agricultural Commodities for Karnataka, Fiscal Policy Institute, Govt. of Karnataka, May, 2017; (2) A.P. Rythu Sangham (AIKS), Kakinada, July 10-12, 2017; (3) 77th Annual Conference of the Indian Society of Agricultural Economics, Guwahati, October 12-14, 2017; (4) National Consultation on Political Economy of Gender and Energy, Indian International Centre, New Delhi, November 01, 2017; (5) Workshop on Contemporary Rural Issues in India, Cherthala, Kerala, December 04-05, 2017; (6) NITI Aayog, Consultation on Leveraging Agriculture for Nutrition, January 30, 2018.

Statistical Quality Control and Operations Research Division

SQC & OR Unit, Kolkata

Bandyopadhyay, A:
(1) Presentation, Secretariat, Chennai, July 03, 2017; (2) Additional Chief Secretary, Government of Tamil Nadu, November 03, 2017; (3) Principal Secretary to the Honourable Prime Minister, Prime Minister's Office, New Delhi, January 22, 2018..

Editorial and other Assignments

Chakraborty, A.K.:
(1) International conference on Advancing Frontiers in Operational Research: Towards a Sustainable World (AFOR2017), Heritage Institute of Technology, Kolkata, December 21-23, 2017.

Das A.K.:
(1) International Conference on Mathematical Analysis and its Applications (ICMAA-2017), Dayanand Science College, Latur, Maharashtra, 2017.

Mukhopadhyay, A.R.:
(1) Post-Graduate Management Program, Indian Maritime University, Indian Institute of Social Welfare and Business Management, Kolkata.

Manna, D.K.:
(1) Presentation, Secretariat, Chennai, July 03, 2017.

Sett, R:
(1) Presentation, Secretariat, Chennai, July 03, 2017.

SQC & OR Unit, Delhi

Chakravorty, R.:
(1) TQM and Six Sigma, National Institute for Training and Standardization, BIS, NOIDA, U.P., November 09, 2017.

Neogy, S.K.:
(1) International Conference on Linear Algebra and its Applications, Manipal Academy of Higher Education, Manipal, December 11-15, 2017; (2) 2nd International Conference on Recent Advances in Mathematical Sciences and its Applications (RAMSA-2017), Department of Mathematics, JIIT Noida, December 12-14, 2017.

SQC & OR Unit, Bangalore

Gijo, E.V.:
(1) 3rd International Conference on Statistics for Twenty-first Century-2017, Kerala University, Trivandrum, December 14-16, 2017; (2) Role of Statistics in Scientific Research, Karnataka Science and Technology Academy, Bangalore, January 04, 2018; (2) Application of Statistics in Engineering and Research, Sri Venkateshwara College of Engineering, Bangalore, February 20, 2018; (4) National Seminar on Innovative Approaches in Statistics & Annual Conference of Kerala Statistical Association, St. Thomas College, Thrissur, February 15-17, 2018.

John, B.:
(1) Workshop on Research Methodology, KST Academy, Bangalore, July 06, 2017; (2) Faculty Development Program on Rapid Miner, Avinashilingam University, Coimbatore, July 25, 2017; (3) Workshop on Data Mining using R, PSNA College of Engineering and Technology, Dindigul, Tamil Nadu, August 10-11, 2017; (4) Faculty Development Program on Predictive Modeling using Python, Sri Ramakrishna Engineering College, Coimbatore, September 14, 2017; (5) Faculty Development Program on Predictive Modeling using Python, RMK College of Engineering and Technology, Chennai, December 06-07, 2017.

Perumallu, P.K.:
(1) 3rd International Conference on Statistics for Twenty-first Century-2017, Kerala University, Trivandrum, December 14-16, 2017.

SQC & OR Unit, Chennai

Biswas, A:
(1) Presentation, Secretariat, Chennai, July 03, 2017.

SQC & OR Unit, Coimbatore

Rajagopal, A:
(1) Venkateswara Springs and Springs Ltd, Kannampalayam, Sulur, Coimbatore, Tamil Nadu, May 31 and August 07, 2017; (2) KGiSL College of Arts & Science, Coimbatore, June 29, 2017; (3) Karpagam University, Coimbatore, July 01, 2017; (4) PSG College of Arts & Science, Coimbatore, September 14, 2017; (5) TIPS Global Business School, Masagoundenchettipalayam, Tamil Nadu, September 25, 2017; (6) Dr. NGP Institute of Technology at Coimbatore, September 26, 2017; (7) Bharathiyar University, Coimbatore, October 20, 2017; (8) HCL organization occasion, HCL Sholinganllur Campus, Chennai, December 13, 2017; (9) DFSS program with projects on New Product Development(NPD), TVS Brakes India, Padi, Tamil Nadu, January 08, 2018; (10) Kumaraguru College of Technology, January 17, 2018; (11) SAVIO, Coimbatore, January 18, 2018; (12) Design Development and sustainable methodologies, M/s. Maria Lousia, February 20, 2018; (13) KG Hospital, March 03, 2018; (14) Periyar University, Salem, March 12, 2018; (15) TIPS Global Business School, March 23, 2018.

SQC & OR Unit, Hyderabad

Subhani, S.M.:
(1) M/s. Center for Electronics and Test Engineering, October 27, 2017.

Center for Soft Computing Research: A National Facility, Kolkata

Ghosh, K.:
(1) Faculty Development Programme, KIIT, University, Bhubaneswar, June 26-30, 2017; (2) 6th International Conference on Advances in Computing, Communications and Informatics (ICACCI 2017), Manipal University, September 13-16, 2017; (3) 3rd International Conference on Computational Intelligence and Networks (CINE 2017), Bhubaneswar, October 28, 2017; (4) Conference on Facets of Basic Sciences and Applications, Bijoy Krishna Girls' College, Howrah, February 05-07, 2018.

Pal, S.K.:
(1) 1st International Conference on Smart Systems, Innovation and Computing (SSIC 2017), Jaipur, April 15 -16, 2017; (2) NASI Council Meeting, NIPGR, New Delhi, April 21-22, 2018; (3) BOG Meeting, PDPM-IIITDM, Jabalpur, Madhya Pradesh, May 27-29, 2017; (4) NIT, Patna, May 31-June 02, 2017; (5) Promotion and Assessment Committee (PAC) Meeting, IISc, Bangalore, June 23-24, 2017; (6) 2017 INSA Jawaharlal Nehru Birth Centenary Lecture, SavitribaiPhule, Pune University, July 12, 2017; (7) NTU-India Connect program International Symposium on Computational Mathematics, Optimization and Computational Intelligence (CMOCI 2017), IIT, Indore, July 17-19, 2017; (8) National Conference on Recent Trends in Biomedical Engineering 2017 (NCRTBME'17), SRM University, Chennai, August 22-23, 2017; (9) Promotion and Assessment Committee (PAC) Meeting, IISc, Bangalore, September 22-23, 2017; (10) 1st International Conference on Data, Engineering and Applications (IDEA-2k17), Rajiv Gandhi Technical University, Bhopal, October 28-29, 2017; (11) International Conference on Information Technology and Applied Mathematics, Haldia Institute of Technology, Haldia, October 30, 2017; (12) Prof. Lotfi A. Zadeh Memorial Seminar on Fuzzy Set Theory and its Applications, National Institute of Technology, Durgapur, December 01, 2017; (13)

Editorial and other Assignments

Promotion and Assessment Committee (PAC) Meeting, IISc, Bangalore, December 07-08, 2017; (14) NASI Council Meeting, Pune, December 09-10, 2017; (15) 5th International Conference on Mining Intelligence and Knowledge Exploration (MIKE 2017), IDRBT, Hyderabad, December 13-15, 2017; (16) INAE Annual Convention, TCS Tiruseri, Chennai, December 15-16, 2017; (17) NASI Council Meeting, NASI, Allahabad, February 04-06, 2018; (18) Vishleswan 2018, Dept. of Industrial and System Engineering, IIT, Kharagpur, February 16-18, 2018; (19) INAE Kolkata Chapter, Center for Research in Nano-Science and Nano-Technology at the University of Calcutta, Salt lake Campus, Kolkata, February 28, 2018; (20) Faculty Selection Committee Meeting, IIT, Roorkee, March 04-06, 2018; (21) ABV - Indian Institute of Information Technology and Management, Gwalior, March 25-28, 2018; (22) 1st International Conference on Data Analytics & Learning (DAL-2018), Mysore University, March 30, 2018.

9. REGIONAL MATHEMATICAL OLYMPIAD 2017 AND INDIAN NATIONAL MATHEMATICAL OLYMPIAD 2018

Mathematical Olympiad Programme in India and Indian Statistical Institute, Kolkata

Regional Mathematical Olympiad 2017-18 in West Bengal was organized by Indian Statistical Institute, Kolkata, and Homi Bhabha Centre for Science Education (HBCSE), on behalf of the National Board for Higher Mathematics (NBHM) of the Dept. of Atomic Energy (DAE), Govt. of India. Prior to RMO 2017, West Bengal held a Pre-RMO examination to select students to appear for RMO. This has been organized by IAPT. Based on their performance, HBCSE prepared a list of 519 candidates. The exam was held at the Hindu School on 8th October 2017. The number of candidates appeared for the RMO examination is 471.

The RMO Committee at the Institute graded the papers for RMO 2017, scrutinized and re-graded upon requests for re-evaluation, and selected top 30 plus 5 girl candidates to appear for INMO 2018 from West Bengal. This decision was communicated to HBCSE, and the final results were declared centrally. The highest score from West Bengal in RMO 2017 was 102 (out of 102), and the top 30 candidates got greater than or equal to 55.

These 35 selected candidates were invited to take part in a week-long INMO-TC at Indian Statistical Institute, Kolkata, held during 6th, 7th, 13th and 14th January 2018, where the students were exposed to advanced problem solving skills by ISI Kolkata faculty members and eminent IMO-TC instructors. Finally, these candidates from West Bengal participated in INMO 2018, including former INMO awardees. The INMO examination was held on 21st January at the Indian Statistical Institute, Kolkata.

Regional Mathematical Olympiad (RMO) 2017: *Karnataka Region*

The mathematical Olympiad activity in Karnataka has been coordinated by the Bangalore Centre of ISI for several years with Dr. Manish Kumar as the regional coordinator for Karnataka. In 2017, the number of students who were selected after PRMO were 623 to take up the Regional Mathematical Olympiad (RMO) for Karnataka region. The exam was held on 8th October, 2017, in 2 centres across the state. With the help of some faculty members at ISI Bangalore, some post-doctoral fellows and research scholars, 520 answer scripts of RMO were evaluated at ISI Bangalore. Thirty-five students qualified to write the national level test Indian National Mathematical Olympiad (INMO). A week long training camp was organized at ISI Bangalore for a total of 55 students, to make them familiar with advanced problem solving techniques before they appear for the INMO. Several distinguished speakers were invited for this purpose. Participants were provided with food and accommodation at ISI Bangalore. The INMO was held on 17-20 January, 2018 at the Bangalore centre. Prof. B. Sury is the National Co-ordinator for the Mathematics Olympiad programme in India from July 1, 2016.

The Madhava mathematics competition for undergraduate students is held in various parts of India. This year also, ISI Bangalore coordinated the activities. Dr. Jaydeb Sarkar was the coordinator. The exam was held on 7th of January, 2018 in ISI, Bangalore. 203 college students from Bangalore registered for the exam. Again, with the assistance of postdoctoral fellows and research scholars, the scripts were evaluated and sent to the national coordinator.

PART III. ADMINISTRATION AND OFFICE BEARERS

10. GENERAL ADMINISTRATION

Administrative Services Division

1. The Administrative Services Division at the Headquarters caters to the various needs of the Scientific Workers in all the Scientific Units of the Institute engaged in various scientific, research and academic activities and provides them with necessary infrastructural facilities in their pursuit of excellence. The centres at Delhi, Bangalore, Chennai and Tezpur, each having a number of scientific units, by and large are getting administrative support from the administrative units/sections there. The Administrative Services Divisions of the Institute has the following units at the Headquarters in Kolkata:

Sl. No.	Name of the Unit	Sl. No.	Name of the Unit
1.	Accounts Section	17.	Import & Travel Cell
2.	Audio-Visual Unit	18.	Internal Audit Cell
3.	Binding Unit	19.	Legal Cell
4.	Canteen	20.	Medical Expenses Reimbursement Unit
5.	Cash	21.	Medical Welfare Unit
6.	C E (A & F)'s Office	22.	Personnel Unit
7.	Central Office & Despatch Unit	23.	Provident Fund Unit
8.	Central Stores & Tailoring Unit	24.	Public Relations Unit
9.	Council Section	25.	Printing and Publication Unit
10.	Director's Office	26.	Official Language Cell
11.	Electrical Maintenance Unit	27.	Retirement Benefit Cell
12.	Engineering Unit	28.	Sankhya Office
13.	Estate Office	29.	Security Unit
14.	Guest House	30.	Telephone Unit
15.	Hostels	31.	Transport Unit
16.	House Building Advance Cell	32.	SC / ST / OBC Cell

2. Apart from the above mentioned Units, there are few cells dealing with Budget, and other issues to take care of the specific needs of the Institute. The Administrative Services Division also looks after the running of Hostels for Students, Research Scholars and International Statistical Education Centre (ISEC) Trainees and also the running of Canteens for the workers and students of the Institute. The other outlying Units are controlled directly by the Headquarters at Kolkata. The Administrative Services Division takes the responsibility for all new constructional activities of the Institute at its Headquarters and also at outlying centres/ branches. A brief report on the construction and other activities during the year is narrated in the subsequent paragraphs.

   The Administrative activities in the four Centres, namely Delhi, Bangalore, Chennai and North East Centre at Tezpur and in other outlying branches of the Institute and Giridih Office, are more or less similar to the Headquarters but on a much smaller scale.

3. **Office bearers of the Institute Administration during the year:**

Director	:	Prof. Sanghamitra Bandyopadhyay
Professors-in-Charge of Scientific Divisions	:	Prof. Arup Bose (Theoretical Statistics & Mathematics)
		Prof. Ayanendranath Basu (Applied Statistics)

		Prof. Arunava Sen (Social Sciences)
		Prof. Tapan Chakraborty (Physics & Earth Sciences)
		Prof. Pabitra Banik (Biological Sciences)
		Prof. Susmita Sur-Kolay (Computer & Communication Sciences)
Head, SQC & OR	:	Shri Somnath Ray
Head, Delhi Centre	:	Prof. Abhay G. Bhatt
Head, Bangalore Centre	:	Prof. T.S.S.R.K. Rao
Acting Head, Chennai Centre	:	Prof. D. Sampangi Raman
Chairman, Committee for ISI North-East Centre, Tezpur	:	Prof. Nityananda Sarkar
Dean of Studies	:	Dr. Amita Pal
Chief Executive (A & F)	:	Prof. Barun Mukhopadhyay

4. List of workers joined/ retired/ voluntarily retired/ resigned/ terminated/ died during the year

A. Appointments

(i) Scientific / Technical Workers

Srl. No.	Name
1.	Kingshook Biswas
2.	Mathew Joseph
3.	Sankar Sarkar
4.	Mridu Prabal Goswami
5.	Kishor Chandra Satpathy

(ii) Non-Scientific Workers

Srl. No.	Name
1.	T. Santosh
2.	Rahul Kumar Banerjee

B. Retirement/Voluntary Retirement:

(i) Scientific & Technical Workers

Srl. No.	Name		Srl. No.	Name
1.	Bhabani Prasad Sinha		12.	Khoka Oraon
2.	Tapas Kumar Chandra		13.	Ratan Dasgupta
3.	Rajendra Bhatia		14.	Tirthankar Ghosh
4.	Sutapa Saha		15.	Sadhana Majumder
5.	Partha Pratim Majumder		16.	Phul Kumari Devi
6.	Anil Kumar Choudhuri		17.	Amiya Kr. Das
7.	Krishna Ch. Banerjee		18.	V.K. Ramachandran
8.	K Ramamurthy		19.	Nibedita Ganguly
9.	Rana Barua		20.	Sujita Dasgupta
10.	Soumendra Nath Sarkar		21.	S.M. Srivastava
11.	Pujarimal Yadav		22.	Vishwambhar Pati

(ii) Non-Scientific Workers

Srl. No.	Name		Srl. No.	Name
1.	Kumud Rn. Naskar		18.	Nanda Deb Roy
2.	Tapan Kr. Banerjee		19.	Mahender Singh
3.	K.B. Aiyappa		20.	Bablu Roy
4.	Anjan Kr. Saha		21.	Netai Kumar Ghosh
5.	Pannalal Bhattacharya		22.	Joydev Chatterjee
6.	A. Aswatha Reddy		23.	Panchu Gopal Rajbhar
7.	Bhupal Mondal		24.	Santosh Mondal
8.	Sangal Roy		25.	D. Dharmappa
9.	Arun Kumar		26.	Sm. Maya Ghosh
10.	Prabir Kr. Chakraborty		27.	Balchand Mallick
11.	Ranjit Kumar		28.	Timal Mahato
12.	Jaya Krishna Kahal		29.	Baidya Nath Ghosh
13.	Bimalangshu Chakraborty		30.	Subhas Kumar Ghosh
14.	Nikhil Kumar Chatterjee		31.	Dulal Mazumder
15.	Giridhari Sinha		32.	Tika Ram Tiwari
16.	Baij Nath Singh		33.	Swapan Kr. Aich
17.	Swapan De		34.	Lalmoni Dobriyal

C. Resignation/Discontinuation of Deputation

(i) Non - Scientific Worker

Srl. No.	Name
1.	Col Soumyabrata Chakraborty

D. Death

(i) Scientific Worker

Srl. No.	Name
1.	Arun Kumar Adhikary
2.	C.A. Murthy

(ii) Non - Scientific Worker

Srl. No.	Name
1.	Kabiraj Mallick
2.	Subir Kr. Acharya
3.	Debasish De
4.	Raju Marandi

5. Number of workers in the Institute as on 31st March 2018

Number of workers in the Institute as on 31st March 2018:

(i)	Scientific and Technical Workers	-	373
(ii)	Non-Scientific Workers	-	434
	Total	:	807

6. Breakup of manpower by Gender, Social Category and Disability group as on 31st March 2018

Total Strength		Persons with Disabilities (PWD)	Scheduled Caste (SC)	Scheduled Tribe (ST)	Other Backward Classes (OBC)	Minorities
Male	686	04	91	21	62	21
Female	121	Nil	11	01	03	02
Total	807	04	102	22	65	23

7. Annual Return on Cases of Sexual Harassment

1.	Number of complaints of sexual harassment received in the year	Headquarters - 1 Bangalore Centre - 1
2.	Number of complaints disposed off during the year 2017-18.	Headquarters - Nil Bangalore Centre - 1
3.	Number of cases pending for more than 90 days.	Nil
4.	Number of workshops on awareness programmers against sexual harassment conducted during the year.	Nil
5.	Nature of action.	Bangalore Centre - Situation resolved through counseling and barring the concerned party from the Hostel.

Administration

8. Applications received and action taken by the Institute under RTI Act, 2005

Name of the Appellate Authority : Prof. Sanghamitra Bandyopadhyay, Director, ISI Kolkata

Name of Central Public Information Officer: Shri A.K. Biswas, Dy. Chief Executive (Admn.), ISI Kolkata

The summary statement in this regard for the year 2017-18 is given below: -

No. of Appli-cations recei-ved	No. of cases accep-ted	Decisions where requests were fully or partially rejected		No. of decisions from Appe-llate Autho-rity	C I C decision			Amount collected (Rs.)		
		Fully rejec-ted	Partia-lly rejec-ted		No. of deci-sions recei-ved	Penalty impo-sed	Disci-plinary action, if any	Fee	Other Char-ges	Penalty amount
114	114	Nil	Nil	5	3	NIL	NIL	720	250	NIL

9. Budget and Finance

For the year 2017-2018, Section 8(1) Committee recommended Rs.25284.98 lakhs under salary head Rs.18182.74 lakhs under 'Creation of Assets' head and Rs.6336.35 lakhs under General Head (BE). The Government approved a sum of Rs.20398.00 lakhs, Rs.4867.00 lakhs and Rs.2950.00 lakhs for salary, capital and general expenditure respectively. At the revised estimate stage, the Institute sought for a grant of Rs.23067.00 lakhs, Rs.6667.00 lakhs and Rs.4095.00 lakhs under salary, capital and general respectively, which was also recommended by the Section 8(1) Committee. The Government sanctioned a grant equal to that of the BE level under salary, capital & general heads. The revenue expenditure was more by Rs.954.75 lakhs from the fund allotted by the Ministry and Miscellaneous receipt. Capital Expenditure was Rs.1303.69 Lakhs less than the fund allotted. The Audited Annual Accounts of the Institute for the year 2017-2018 has been furnished in Part III of this report.

10. Major Construction / Repair works taken up by the Institute during 2017-2018

A. **Kolkata**

R C Bose Centre for Cryptology and Security

The centre is located at Gupta Niwas campus of the Institute. Planning, Design-Engineering, Execution and overall Project Management for construction of buildings and other infrastructure of the campus was awarded to M/s NBCC as deposit work. Construction activity started in May, 2015. Construction of the Cryptology Centre (G+7), Hostel Building (G+7) and two Residential Blocks (G+10 & G+4) is in progress. Building superstructures are complete; interior & exterior finishing works and building-services like sanitary & plumbing, electrical, HVAC, Fire-Fighting and suppression system are in progress. Estimated project cost is about Rs. 80 crore. The project is expected to complete by September, 2018.

- Construction of New Academic Building - Construction of a new Academic Building (G+5) has been taken up at main campus as deposit work. M/s Bridge & Roof Co (India) Ltd is the project implementing agency. Planning, Geotechnical Investigation, Detailed Design Engineering and cost estimation have been completed. Total sanctioned cost of the building is Rs. 37.70 crore. Selection of contractor has been initiated.

- Repair, Renovation work of R. A. Fisher Bhavan & S.N. Bose Bhavan - Major repair and renovation of these two buildings at the main campus were in progress during 2017-18. M/s Bridge & Roof is the implementing agency. Repair renovation of building external surface, structural repair, toilets including sanitary & plumbing system renovation, renovation of offices of some of the Units etc. are the scope of work. Work is expected to be complete by December 2018.

B. **Delhi**

(i) Land and construction:

(ii) Major civil and electrical works during the period April 01, 2017 to March 31, 2018 are :-

S.No	Description of Work	Total Amount
	(CIVIL WORKS)	
1.	Renovation, water proofing and fencing work	Rs.13,56,700
2.	Providing disabled friendly infrastructure work in progress	Rs. 19,84,000
3.	WAC Meeting held at ISI Delhi Centre dated 15/05/2017 to discuss and finalise the revised proposal/estimates submitted by CPWD.	-
	(Electrical Works)	
1.	New Air cooked package A/C at Library buildings	2,26,000
2.	New Earth bit work	1,49,130
3.	New Street light pole with fittings	1,92,634
4.	SITC of 6 KVA UPS at admin block	1,35,446
5.	PPRU cable and DB fitting work	62,530
6.	SITC of 2 ton split AC at conference room	91,500
7.	SITC of 1.5 ton window AC at faculty block	1,01,400

C. **Bangalore**

Major construction / renovation works completed / undertaken by the Bangalore Centre during 2017 - 2018.

(i) Construction of Second Floor of Guest House: The structural work has been completed. The finishing works are under progress.

(ii) Construction of New Academic Building: The preliminary drawing and estimate have been submitted by NPCC Ltd. Paper notification for selection of the contractor has been completed and the selection of contractor is under process. NPCC Ltd. is in the process to obtain necessary sanctions/ approvals from various departments/authorities.

(iii) Extension of Canteen Building: The necessary ground work such as identification of location, preparation of preliminary plan and estimate etc have been completed. The selection of contractor is being completed.

(iv) Construction of Vehicle Parking near Research Scholars' Hostel: The work has been successfully completed.

(v) Modernization of Fire Extinguishers: The work has been completed.

(vi) Installation of 8 passenger New Lift at Main Building: The work has been awarded to M/s Kone Elevator India Pvt. Ltd

(vii) Galvanized Steel Roof for Outdoor D G Sets, Feeder Boxes and Sump Tank: The selection process for a contractor has been completed. The work is expected to be started shortly in the next financial year.

D. Chennai

***Construction*:**

(a) Boundary Wall: Boundary construction was successfully completed by NBCC. The final settlement and site handing over was done during November, 2017. The total length of the Boundary wall is 711.88 meters and has 479 piles.

(b) **Earth Filling:** Earth filling of the low lying area of our site at Karapakkam is being carried over by CPWD. The earth filling work was estimated for Rs. 6,16,80,000/- (Rupees six crores, sixteen lakhs eighty thousand only). About 50% of the work is over.

E. Tezpur

Construction of campus over 25- acre of land located at Punioni, Tezpur, started in full swing from the last quarter of 2017. Out of a total of 13 buildings, the construction activities are underway for 7 types of structures currently, namely, Administration Building, Academic Building, Boys' Hostel, Canteen, Guest House, Amenities Building, Transit Quarters (quarters for the workers). The sub-structure works of these buildings are under progress up to the plinth level, whereas for the Administration Building, further progress has been made with plinth beams and column expansion. The amount of expenditure incurred so far is Rs. 8.41 crores for the financial year 2017-18. NBCC INDIA LIMITED is the PMC of this project.

11. Society Type Activities

A. Membership: April 2017 – March 2018

During the period 50 persons became Ordinary Members of the Institute and 12 Ordinary Members became Life Members of the Institute.

The membership position as on 31 March, 2018 is as follows:

Ordinary Members	-	303
Life Members	-	1038
Institutional Members	-	05
Total	-	1346

B. Finance Committee Meeting: The Finance Committee met on 16th October, 2017. Besides the decisions taken on various financial matters, the Finance Committee recommended RE 2017-18 and BE 2018-19 (both Plan and Non-Plan) in this meeting held on 16th October, 2017. The Annual Report including Audited Statement of Accounts for the year 2016-2017 was considered and also recommended in this meeting.

C. Council Meetings: During the period under report (2017-18), the Council met four times on 25th May, 2017, 16th September, 2017, 15th November, 2017 and 9th March, 2018 to take decisions on various academic and administrative matters of the Institute. The Budget Proposals of the Institute both for Plan and Non-Plan (RE 2017-18 and BE 2018-19) were considered in the meeting of the Council held on 15th November, 2017, as recommended by the Finance Committee in its meeting held on 16th October, 2017. The Annual Report including the Audited Statement of Accounts for the year 2016 – 2017 was considered and approved by the Council in its meeting held on 15th November, 2017.

   Please refer to the Back Cover Page and Chapter 12 for details regarding composition of the Council and different committees constituted by the Council.

D. Annual General Meeting: During the period under report (2017-18), the Annual General Meeting was held on 29th November, 2017. The Annual Report of the Institute for the year 2016-2017 and Audited Statement of Accounts for the year 2016-2017 together with the Auditor's comments and replies of the Administration thereto were adopted in the meeting of the General Body held on 29th November, 2017.

12. Awareness programmes conducted by Medical Welfare Unit

Medical Welfare Unit caters to the Health Care need of the students, faculty, workers and their family members of Indian Statistical Institute.

- Two full time Resident Medical Officers perform regular OPD services as well as Emergency Medical Services as and when necessary.
- Specialist clinic of Eye and Psychiatry are held twice a week .
- Specialist clinic of ENT is held three days a week.
- Regular Counselling sessions by two Psychological Counsellors are held two days a week, which is availed by students and all workers and their family members.
- Retired staff and their spouses are also provided with Medical care on OPD basis.
- Some essential medicines are supplied by the Pharmacy of MWU.

Medical Welfare Unit organises various awareness programmes for the benefit of workers and students. A large number of workers and students participated in the following seminars and sensitization programmes last year.

(i) Sensitization program on Mental Health in collaboration with Dean's office on 08/08/2017

Speaker: Mr Mohit Ranadip

(ii) Depression : Let's Talk on 06/03/2018

Speakers: Dr Jyotirmoy Samajder
Ms Swati Mitra
Mr Mohit Ranadip

(iii) Oral Health : An Untold Story on 26/03/2018 in association with K K Chatterjee Memorial Association (NGO)

Speaker: Dr Ramdas Chatterjee

13. Training Programme on Hindi Implementation

Shri Manoj Kr. Pandey, Sr. Administrative Officer, Official Language Cell of the Institute participated in the training programme on Hindi Implementation and received 'Rajbhasa Abhusan' Award by Bhartiya Bhasa Evam Sanskriti Kendra, New Delhi, on behalf of the Institute.

14. A brief description of specific achievements and functions on implementation of the Official Language Policy by the Institute during the year 2017-18

During the year 2017-18 the Official Language Cell of the Institute organized four Hindi workshops respectively in the month of June, September, December and March. Almost 128 employees of the Institute participated in these workshops. Issues like 'Noting and Drafting and Hindi Grammar', 'Official Language Policy', 'Usefulness of Official Language in the office', 'Use of Indian Languages on Computer' and 'The importance of Hindi in today's context' were mainly discussed in these workshops.

During the financial year 2017-18, the Hindi Pakhwara was inaugurated by the Director of the Institute Prof. Sanghamitra Bandyopadhyay on 1st September, 2017. During the fortnight, (1st September, 2017 to 15th September, 2017) Hindi Day was celebrated on 14.09.2017 at the Institute. Indian Statistical Institute is also an active member of the Town Official Language Implementation Committee, Kolkata (Office 2).

Like the Headquarters, the Delhi Centre of the Institute also arranged workshops throughout the year and celebrated Hindi Pakhwada as well. A small Hindi library was established in the year 2016 in which daily Hindi Newspaper, few magazines and 29 Hindi Books were purchased in the first lot.

11. LIST OF MEMBERS OF THE ACADEMIC COUNCIL AND OTHER COMMITTEES OF THE INSTITUTE AS ON 31 MARCH 2018

1. Academic Council

Sanghamitra Bandyopadhyay, Director (Chairman)

Amita Pal, Dean of Studies (Convener)

A. Theoretical Statistics and Mathematics Division

T.S.S.R.K. Rao, B.V. Rajarama Bhat, Bhaskar Bagchi, Mohana Delampady, Sunanda Bagchi, B. Rajeev, B. Sury, V.R. Padmawar, Siva Athreya, C. Robinson Edward Raja, Probal Chaudhuri, Alok Goswami, Arup Bose, Goutam Mukherjee, Gopal Krishna Basak, Pradipta Bandyopadhyay, Amartya Kumar Dutta, Debashish Goswami, Rudra Pada Sarkar, Mahuya Datta, S. Pannusamy, Rahul Roy, R.B. Bapat, Abhay Gopal Bhatt, Arup Kumar Pal, Isha (Bagai) Dewan, Anish Sarkar, Swagato Kumar Ray, Ritabrata Munshi, Ramesh Sreekantan, Rajat Subhra Hazra.

B. Applied Statistics Division

Sushama M. Bendre, Bimal Kr. Roy, Debasis Sengupta, Anup Dewanji, Mausumi Bose, Palash Sarkar, Ashis SenGupta, Debapriya Sengupta, Tapas Samanta, Atanu Biswas, Subhamoy Maitra, Pabitra Pal Choudhury, Ayanendranath Basu, Subir Kumar Bhandari, Smarajit Bose, Rita Saha Ray, Sumitra Purkayastha, Mridul Nandi, Kiranmoy Das.

C. Social Sciences Division

Madhura Swaminathan, Satya Ranjan Chakravarty, Amita Majumder, Abhirup Sarkar, Nityananda Sarkar, Manash Ranjan Gupta, Tarun Kabiraj, Monoranjan Pal, Manipushpak Mitra, Indraneel Dasgupta, Arunava Sen, Bharat Ramaswami, E. Somanathan, Prabal Roy Chowdhury, Probal Dasgupta, Tridip Ray, Chetan Ghate. Abhiroop Mukhopadhyay, Souvik Roy, Debasis Mishra.

D. Biological Sciences Division

Joydev Chattopadhyay, Anjana Dewanji, Arunava Goswami, Barun Mukhopadhyay, Subrata Kr. Roy, Parasmani Dasgupta, Bidyut Roy, Saurabh Ghosh, Sabyasachi Bhattacharya, Indranil Mukhopadhyay, Pabitra Banik, Susmita Mukhopadhyay.

E. Physics and Earth Sciences Division

Dilip Saha, Chandan Chakraborty, Dhurjati Prasad Sengupta, Saswati Bandyopadhyay, Pinaki Roy, Subir Ghosh, Barnana Roy, Banasri Basu, Guruprasad Kar, Parthasarathi Ghosh, Preeti Parashar, Supratik Pal, Amlan Banerjee.

F. Computer and Communication Sciences Division

Bhargab Bikram Bhattacharya, Subhas Chandra Nandy, Nabanita Das, Susmita Sur-Kolay, Krishnendu Mukhopadhyay, Sandip Das, Swapan Kr. Parui, Umapada Pal, A.R.D. Prasasd, Bhabatosh Chanda, Nikhil Ranjan Pal, Kumar Sankar Roy, Dipti Prasad Mukherjee, Srimanta Pal, Sushmita Mitra, Ashish Ghosh, Sanghamitra Bandyopadhyay, Rajat Kumar De, Devika P. Madalli, B.S. Daya Sagar. Deba Prasad Mandal, Sarbani Palit, Utpal Garain.

Administration

G. Statistical Quality Control and Operations Research Division

Kalyan Kumar Chowdhury, P.K. Perumallu, Ashim Roy Chowdhury, U. Haridas Acharya, Surajit Pal, A. Rajagopal, Samir Kr. Neogy, G.S.R. Murthy, A.L.N. Murthy, Amitava Bandyopadhyay, Dipak Kr. Manna, Arup Kumar Das, Ranjan Sett, Arup Ranjan Mukhopadhyay, Abhijit Gupta, Prasun Das, Ashis Kr. Chakraborty, Nandini Das, Susanta Kumar Gauri, Md. Zafar Anis, Ashok Sarkar, Amit Kr. Biswas, Biswabrata Pradhan, Sanjit Ray, E. V. Gijo

H. Library, Documentation and Information Sciences Division

Kishor Chandra Satpathy

I. Computer and Statistical Service Centre (CSSC)

Debashis Roy, Amitava Datta,

J. Member-Secretary, ISEC

Ayanendranath Basu

2. Other Committees of the Institute

A. Finance Committee

Director (Chairman), Government Representative (MOS & PI), Government Representative (Ministry of Finance), Professor Abhirup Sarkar, ISI Kolkata, Professor Pabitra Banik, ISI Kolkata, Professor S.M. Srivastava, ISI Kolkata, Professor Dilip Saha, ISI Kolkata, Professor Chetan Ghate, ISI Delhi, Head, Delhi Centre, Head, Bangalore Centre, Head, Chennai Centre, Sh. Somnath Ray, ISI Bangalore, Shri Samar Ray (Former PS, Finance Dept., Govt. of WB; Former Dy. Comptroller and Auditor General, Govt. of India), External Expert, External Expert (to be decided soon), Chief Executive (A&F), Sudip Chakraborty (Convener), DCE (Finance).

B. Sankhyā Editorial Committee

(i) Editor-in-chief, *Sankhyā*, Series A and Series B:

Prof. Dipak K. Dey (University of Connecticut, Storrs, CT, U.S.A.)

(ii) Editors, *Sankhyā*, Series A:

Prof. Krishna B. Athreya (Iowa State University, U.S.A.), Prof. Gopal K. Basak, (Indian Statistical Institute, Kolkata), Prof. Francisco Louzada (Universidade De Sao Paulo, Brazil),

(iii) Editors, *Sankhyā*, Series B:

Prof. Sudipto Banerjee (University of California, Los Angles, U.S.A.), Prof. Bertrand Clarke (University of Nerbraska-Lincoln, U.S.A.), Prof. Bani Mallick (Texas A & M University, U.S.A.), Prof. Sumitra Purakayastha, (Indian Statistical Institute, Kolkata),

C. Works Advisory Committees

(i) Kolkata

Anandapran Gupta (Chairman), Former Head, Civil Department, IIT Kharagpur, Smarajit Bose (Vice-Chairman), Rajkumar Roychowdhury, Susmita Mukhopadhyay, Indranil Dasgupta, Ashis K. Chakraborty, External Expert (Civil), External Expert (Architecture), External Expert (Electrical), Chief Executive (A&F), Amal K. Biswas, Partha P. Mohanty, Amitava Mukherjee, In-Charge, EMU, In-Charge, Engg. Unit (Convener), External Expert (Environment/Pollution Control to be co-opted/invited by the Chairman when required).

(ii) Delhi

Prof. B. Bhattacharjee, Civil Engineering department, IIT Delhi (Chairman), Head ISI Delhi – Member, Mr. G. K.Taneja, Institute Engineer, IIT Delhi– Expert (Electrical), Mr. R. Upadhyay, Executive Engineer (Civil), Shri Lal Bahadur Sanskrit Vidyapeeth - Expert (Civil), Expert Architecture (to be co-opted later), Prof. Arup Pal, ISI Delhi, Prof S. K. Neogy, ISI Delhi, Prof. Chetan Ghate , ISI Delhi, Mr. Sujan Dutta, ISI Delhi, Mr. Kaisar Alam, OSD, ISI Delhi (Convener).

(iii) Bangalore

Professor K. S. Nanjunda Rao (Chairperson); Dr K. Keshavan, External expert (Electrical Engineering); Dr S. V. Venkatesh, External expert (Civil Engineering); Head, ISI, Bangalore Centre; Head, Stat-Math Unit, ISI, Bangalore or his/her nominee); Head, DRTC, ISI, Bangalore or his/her nominee; Head, SQC & OR Unit, ISI, Bangalore or his/her nominee; Head, E.A.U., ISI, Bangalore or his/her nominee; Dr. Kaushik Majumder, ISI, Bangalore; Accounts Officer, Bangalore Centre; Shri P.C. Karan, Administrative Officer, ISI, Bangalore (Convener).

D. Ph.D. / D.Sc. Committees

(i) Statistics

Director (Chairperson), Dean of Studies, Mausumi Bose, Gopal K. Basak, Mohan Delampady, V. Padmawar, Isha Dewan, Abhay G. Bhatt, Ayanendranath Basu, C.A. Murthy, Atanu Biswas, Tapas Samanta (Convener).

(ii) Mathematics

Director (Chairperson), Dean of Studies, B. Sury, Siva Athreya, Anish Sarkar, Arup K. Pal, Mahuya Datta, Swagata K. Ray, Banasri Basu, Debashish Goswami (Convener).

(iii) Computer Science

Director (Chairperson), Dean of Studies, Palash Sarkar, Subhas C. Nandy, Susmita Sur-Kolay, Mandar Mitra, Bhabatosh Chanda, Nikhil R. Pal, Sushmita Mitra, C.A. Murthy, Utpal Garain (Convener).

(iv) Quantitative Economics

Director (Chairperson), Dean of Studies, Nityananda Sarkar, Manipushpak Mitra, Prabal Roy Chowdhury, Bharat Ramaswami, Debasis Mishra, Anup Dewanji, Tarun Kabiraj (Convener).

Administration

(v) SQC & OR

Director (Chairperson), Dean of Studies, C.A. Murthy, Anup Dewanji, Mohan Delampady, E.V. Gijo, Ashis K. Chakraborty, S. K. Neogy, D. K. Manna, Arup K. Das (Convener).

E. Policy Planning and Evaluation Committee (PPEC)

Chairman of ISI Council (Chairman); Director (Vice-Chairman); Director General, CSO; Financial Advisor, MOS & PI; Professor Kalyan B. Sinha, Former Director, ISI; Professor B.L.S. Prakasa Rao, Former Director, ISI; Professor Partha P. Majumder, ISI; Professor Partha P. Chakraborty, Director, IIT Kharagpur; Professor T.S.S.R.K. Rao, Head ISI Bangalore; Professor Bharat Ramaswami, ISI Delhi; Professor Dhrubojyoti Chattopadhyay, Former Pro-VC (Acad), Calcutta University; VC Amity University; Professor Dipti P. Mukherjee, ISI (Convener).

F. Technical Advisory Committees of different Divisions

(i) Theoretical Statistics and Mathematics Division

Director, ISI (Chairperson), Professor V. Balaji. Professor Ravi Rao, Professor Indranil Biswas, Professor Tathagata Bandyopadhyay, Professor B.L.S. Prakasa Rao, Professor V.S. Borkar, Professor-in-Charge, Statistics & Mathematics Division (Convener).

(ii) Applied Statistics Division

Director, ISI (Chairperson), Professor S.P. Mukherjee, Professor Rahul Mukherjee, Professor Debasis Kundu, Professor Swadheenanda Pattanayak, Professor-in-Charge, Applied Statistics Division, (Convener).

(iii) Computer and Communication Sciences Division

Director, ISI (Chairperson); Professor Partha P. Chakrabarti, Professor Naveen Garg, Dr. Satyanarayana V. Lokam, Prof. Subhasis Chaudhuri, Dr. Ramesh Hariharan, Professor Pushpak Bhattacharya, Professor K.S. Raghavan, Professor-in-Charge, Computer & Communication Sciences Division (Convener).

(iv) Physics and Earth Sciences Division

Director, ISI (Chairperson), Professor Ashok Sahni, Professor S.K. Tandon, Professor Sudipta Sengupta, Prof. M. Lakshmanan, Professor Indrani Bose, Prof. C.S.P. Ojha, Professor-in-Charge, Physics & Earth Sciences Division (Convener).

(v) Biological Sciences Division

Director, (ISI) Chairperson, Professor Nitai P. Bhattacharyya, Professor Himanshu Pathak, Dr. Giriraj Chandak, Dr. A.R. Sharma, Professor S.P. Singh, Professor Aditya Chatterjee, Professor-in-Charge, Biological Sciences Division (Convener).

(vi) Social Sciences Division

Director, ISI (Chairperson), Professor Achla Raina, Professor Rajni Palriwala, Professor Saikat Sinha, Professor Arvind Pandey, Dr. Subrata Lahiri, Professor Manoj Panda, Professor-in-Charge Social Sciences Division (Convener).

(vii) Statistical Quality Control and Operations Research Division

Director, ISI (Chairperson), Professor Ramanuj Majumdar, Professor Debasis Kundu, Mr. Vadiraj Kulkarni, Dr. Richard Lobo, Shri. S. Krishnan, Dr. Gautam Chatterjee, Head, SQC & OR Division (Convener).

(viii) Library, Documentation and Information Sciences Division

Director, ISI (Chairperson), Dr. M. Paul Pandian, Dr. G. Mahesh, Dr. P.R. Goswami, Professor Sachindra Nath Bhattacharya, Kishor Chandra Satpathy, Chief Librarian (Convener).

EDITORIAL BOARD

Acknowledgements

The Editorial Board gratefully acknowledges the assistance rendered by the staff of the CE (A & F)'s Office, Public Relations Unit, Publication & Printing Unit and Reprography & Photography Unit in the preparation of this Annual Report.

Prof. Stephen Mack Stigler visiting P C Mahalanobis Memorial Museum & Archives at ISI, Kolkata on 11 December 2017

Prof. S. Bandyopadhyay, Director, ISI at "Anti-Ragging Awareness Programme" on 08 August 2017

Inauguration of Women's Day Celebration and Photography Exhibition at ISI, Kolkata on 08 March 2018

Shri Ramachandra Guha, Indian Historian, visiting ISI, Kolkata on 07 February 2018

Felicitation of Dr. Ramdas Chatterjee by Prof. Amita Pal, Dean of Studies, ISI on the occasion of "Oral Health - An Untold Story" on 26 March 2018

Celebration of "126th Birth Anniversary of Dr. B. R. Ambedkar" organized by ISI SC/ST/BC Employees' Co-ordination Council on 12 October 2017

Prof. David Jonathan Gross, Nobel Laureate, at the 52nd ISI Convocation, Kolkata on 09 January 2018

52nd Annual Convocation at ISI, Kolkata on 09 January 2018

"Hindi Pakwara" organized by ISI, Kolkata on 14 September 2017

70th ISEC Convocation at ISI Kolkata on 30 May 2017

Prof. M. Vellasco delivering lecture on 2017 IEEE CIS Summer School on "Recent Advance in Computational Intelligence (RACI)" at ISI, Kolkata during 18-22 September 2017

Condolence in memory of Prof. J K Ghosh, former Director, ISI on 11 October 2017

Published by Public Relations Unit, ISI, 203 B. T. Road, Kolkata-700108
Printed by Publication & Printing Unit, ISI, 203 B. T. Road, Kolkata-700108
Concept and Design by Reprography and Photography Unit, Library Division, ISI, 203 B. T. Road, Kolkata-700108