

**Review of the activities of Indian Statistical Institute  
for the year 2019-2020**

The Indian Statistical Institute, Kolkata was established on 17<sup>th</sup> December, 1931 and was registered as a non-profit learned society under the Societies Registration Act (XXI of 1860) on 28<sup>th</sup> April, 1932 and subsequently came under the purview of the West Bengal Societies Registration Act (XXVI of 1961) which was amended in 1964. The Institute was recognised as an “Institution of National Importance” by “The Indian Statistical Institute Act, 1959, No.57 of 1959” of the Parliament on 24<sup>th</sup> December, 1959. The “Indian Statistical Institute (Amendment) Act, No.38 of 1995” of the Parliament, empowered The Institute to award degrees/diplomas in Statistics, Mathematic, Quantitative Economics, Computer Science and such other subject related to statistics as may be determined by the Institute from time to time. The Institute is engaged in an integrated programme of research, training and practical application of statistics and interdisciplinary studies through several projects in close collaboration with the Government of India, national and international organisations, maintaining a very high standard as a centre of excellence, which has resulted in its earning several national/ international recognitions over the years.

2. The objectives of the Institute are:

- (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 of 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) above.

3. The Institute has its Headquarters in Kolkata with four other centres at Delhi, Bangalore, Chennai and the North-East Centre at Tezpur, Assam. The Institute has also a branch at Giridih and network of service units of Statistical Quality Control and Operations Research Division across the country at Mumbai, Coimbatore, Pune and Hyderabad besides Kolkata, Delhi, Bangalore and Chennai.

4. As envisaged in the “Indian Statistical Institute Act, 1959, No. 57 of 1959”, the Institute is fully funded by the Government of India. The major amount of internal receipts comes from the application fee for admissions, realisation from staff on account of licence fee, share of overhead charges from externally funded projects, fees from consultancy rendered by the faculty of the Institute.

5. The accounts of the Institute for 2019 - 2020 has been audited by M/s. K. S. Bothra & Co. Chartered Accountants, Kolkata who were appointed by the Institute for the purpose after their selection by the Government of India in consultation with the Comptroller & Auditor

General, India and the Institute, as per provision contained in Section 8(1) of the “Indian Statistical Institute Act, 1959, No. 57 of 1959”.

6. The programme of work in a particular year, the financial estimates thereof and quantum of grants to be given by the Ministry of Statistics and Programme Implementation for the purpose, are decided in the light of the recommendations of a committee set up by the Ministry of Statistics and Programme Implementation under Section 8(1) of the “Indian Statistical Institute Act, 1959, No. 57 of 1959”. The composition of the committee includes distinguished scientists as well as representatives from the Government of India, namely the Ministry of Statistics & Programme Implementation and the Ministry of Finance. The programme of work and the expenditure estimates/grants for 2019-2020 were accordingly worked out on the basis of the recommendations of the aforesaid committee. During the year 2019-2020, ISI Council recommended Rs.24935.53 lakhs under salary head, Rs.11665.53 lakhs under ‘Creation of Assets’ head and Rs.6214.77 lakhs under General Head (BE). The Government approved a sum of Rs.23059.00 lakhs, Rs.3842.00 lakhs and Rs.2993.38 lakhs for salary, capital and general expenditure respectively. At the revised estimate stage, the Institute sought for a grant of Rs.27554.00 lakhs, Rs.4802.00 lakhs and Rs.4043.38 lakhs under salary, capital and general respectively, which was also recommended by the ISI Council. The Government sanctioned similar amount of fund as in BE stage under salary, capital & general heads respectively. The revenue expenditure was more by Rs.2320.91 lakhs from the fund allotted by the Ministry and Miscellaneous receipt. Capital Expenditure was Rs.926.26 Lakhs less than the fund allotted. The Audited Annual Accounts of the Institute for the year 2019-2020 has been furnished in Statement of Accounts and Auditors’ Report.

7. During the year, the Institute continued to conduct its regular and professional courses for students leading to award degrees in 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 Cryptology and Security; 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 and degrees awarded by ISI in Statistics; Mathematics; Quantitative Economics; Computer Science; Quality, Reliability and Operations Research & Research Fellowships awarded by ISI and degrees awarded by other academic bodies in areas including Biological Sciences, Geology, Library & Information Science and Physics.

8. The Institute runs the International Statistical Education Centre (ISEC), an Associate Institute in Kolkata, under the auspices of the UNESCO and the Government of India. The centre provides training in theoretical and applied statistics at various levels to selected participants from the countries in the Middle-East, South and South-East Asia, the Far-East and the Commonwealth countries in Africa. Major training programme of the centre is a 10-month regular course in Statistics leading to Diploma in Statistical Training. In addition, special courses of varying duration were also organized. During the year, ISEC successfully completed its training program of 72<sup>nd</sup> batch of the Regular Courses with 14 trainees from eleven different countries like Bhutan, Cambodia, Fiji, Mongolia, Myanmar, Niger, Nepal, South Africa, South Sudan, Sri Lanka; Tanzania and awarded Diploma in Statistical Training.

9. The R.C. Bose Centre for Cryptology and Security of the Indian Statistical Institute at Kolkata 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. M. Tech in Cryptology and Security, a one of its kind degree program, has been initiated at the Centre. It also offers short-term (one semester) certificate course on the basics of Cryptology, Security and allied disciplines for Government officials and scientists. The Centre also offers short-term intensive workshops or lecture series on specialized topics related to Cryptology and Security. One 3 years R&D project on Cybersecurity for National Technology Research Organization (NTRO) has been initiated since November, 2019 with a funding of Rs. 9 crores. Another 4-week long training program for CRPF officers on Cybersecurity was conducted during March, 2020. However, the last week of the program has been deferred due to the pandemic situation. The faculty members affiliated with the Centre work on various research topics in the domain of Cryptology and Security. The members of the Centre are also actively involved in sponsored research projects, funded by Government organizations as well as the Industry, in niche domains of the subject. The research programmes focus on the theoretical as well as the applied aspect of Cryptology and Security research. Many externally funded projects funded by Department of Science and Technology, Govt. of India; Department of Atomic Energy, Govt. of India; DRDO etc. were also carried out this year.

#### Centre for Artificial Intelligence and Machine Learning

A new centre for Artificial Intelligence and Machine Learning (CAIML) has been established in 2019 with a mission to leverage the multidisciplinary nature of research and teaching at the Indian Statistical Institute (ISI) to establish a world class pan-India centre of excellence for research, development, teaching, and training in Artificial Intelligence (AI), Data Science (DS), and related areas. The centre aims to use Machine Learning, Artificial Intelligence and Data Science as transformative technologies for human welfare and knowledge economy, thereby helping the nation in achieving its sustainable development goals. The activities of CAIML are organized under the following four major verticals like (i) Research, (ii) Training and short-term course, (iii) Collaboration and (iv) Industry Liaison. During the last financial year (2019-2020), the Centre organized a short course on Machine Learning for Twenty-two nos. of practitioners during November 18-23, 2019. An Indo-French joint international workshop on Statistics and AI for Data Science (SAIDS) was organised by the Centre in ISI and several French Institutes together under the patronization of the Indo-French Centre for Applied Mathematics (IFCAM) and held during Jan 13-17, 2020.

#### Centre for Research on the Economics of Climate, Food, Energy and Environment

Recognising the societal commitments to environmental sciences, a Centre for Research on the Economics of Climate, Food, Energy and Environment (CECFEE) has been introduced at ISI Delhi Centre. The Centre is dedicated to in-depth economic research and analysis on the interlocking issues of climate change, energy security, environmental protection and food security in India.

10. The Associate Institute, “Center for Soft Computing Research: A National Facility”, which was established in 2005 with funds from the Department of Science and Technology, Government of India under its IRHPA (Intensification of Research in High Priority Areas) scheme. The Center is aimed at conducting research both in theoretical and applied areas, of international standard, in the fields of soft computing.

11. The Annual Report for the year 2019-2020 indicates the details of research work carried out by the Institute during the year in Applied Statistics Division; Biological Sciences Division; Computer and Communication Sciences Division; Physics and Earth Sciences Division; Social Sciences Division; Statistical Quality Control & Operations Research (SQC & OR) Division; Theoretical Statistics and Mathematics Division and Library, Documentation & Information Sciences Division. The composition of each Division is given below:

**Applied Statistics Division:** Applied Statistics Unit at Bangalore, Chennai and Kolkata; Interdisciplinary Statistical Research Unit at Kolkata. Applied and Official Statistics Unit at North-East Centre, Tezpur.

**Biological Sciences Division:** Agricultural & Ecological Research Unit at Kolkata and Giridih; Biological Anthropology Unit and Human Genetics Unit at Kolkata.

**Computer and Communication Sciences Division:** Advanced Computing & Microelectronics Unit, Computer Vision & Pattern Recognition Unit, Cryptology and Security Research Unit, Electronics & Communication Sciences Unit, Machine Intelligence Unit at Kolkata;, Documentation Research and Training Centre and Systems Science & Informatics Unit at Bangalore and Computer Science Unit at Chennai.

**Library, Documentation & Information Sciences Division:** Central Library at Bangalore Chennai, Delhi, Kolkata and North-East Centre, Tezpur.

**Physics & Earth Sciences Division:** Geological Studies Unit and Physics & Applied Mathematics Unit at Kolkata; Theoretical & Applied Sciences Unit at North-East Centre, Tezpur.

**Social Sciences Division:** Economic Research Unit, Linguistic Research Unit, Population Studies Unit, Psychology Research Unit, Sampling & Official Statistics Unit at Kolkata; Sociological Research Unit at Kolkata and Giridih; Economic Analysis Unit at Bangalore and Economics Planning Unit at Delhi, Socio-Economic Research Uni, at North-East Centre, Tezpur.

**Statistical Quality Control & Operations Research (SQC & OR) Division:** Bangalore, Chennai, Coimbatore, Delhi, Hyderabad, Kolkata, Mumbai, Pune and a Central SQC (CSQC) Office at Kolkata.

**Theoretical Statistics and Mathematics Division:** Stat-Math Unit at Bangalore, Delhi and Kolkata.

The Computer and Statistical Service Centre (CSSC) is responsible for managing/maintaining the IT infrastructures of the Institute. The IT infrastructures of the Institute consist of server's virtualization (cloud), softwares [VMware (esxi and VCenter), Matlab, Mathematica, ArcGis, R etc], Network (wired and Wi-Fi), Network and Internet security, IP Telephones, Video conferencing facility, e-library and internet facilities (NKN - 1 Gbps). CSSC have been maintaining the connection (using Site-to-Site Virtual Private Network (VPN)) with outlying Centres (Delhi, Chennai, Tezpur and Bengaluru) and the Giridih Unit of the Institute. The IT infrastructures have been utilized by all the Centers /Branches of the

Institute by VPN connectivity. Various academic and administrative meetings including Academic Council meetings among the Institute's Centers (Delhi, Bengaluru, Chennai and Tezpur) and Giridih Unit through Video Conferencing facilities were being arranged/managed successfully. The cloud infrastructure with virtualization software, Cisco UCS servers (408 cores/608 threads and 6000 GPU cores) and the EMC 260 TB storage were managed by CSSC, providing the computing facility to the users of the Institute. Lab facilities to all the Students of Kolkata campus are provided. Laboratory classes of regular courses like B.Stat., M.Tech. (CS), M.Tech (QR), M.S. (QE), M.Stat. are being held in the computer laboratories of CSSC throughout the year. Some classes (especially M.Tech. (CS) and PGDSMA courses of Tezpur Centre) through video conferencing, facilities are being organized by the CSSC throughout the year. Online tests of our students for placement purpose are being conducted in CSSC laboratories. The access of accounting package FACT (installed in the server of ISI Kolkata) have been maintained by CSSC and these have been facilitated to all outlying Centers and Branches through the VPN connections. The LAN (wired) connections with 10 GB backbone between hostel rooms (excluding ISEC) in Kolkata campus and CSSC have been maintained efficiently. The Wi-Fi facility covering the ISEC hostel is maintained by the Center. Members of CSSC take part in teaching different courses of the Institute and also supervised project work of non-ISI students studying MCA, B.Tech. etc. The CSSC have been providing Laptops and Desktops to faculty, scientific staff and research scholars in Kolkata and Giridih campus. The CSSC has been providing required training to computer trainees who are in turn providing technical support to the Institute.

## 12. Externally Funded Project

Apart from theoretical and experimental plan research, the Institute undertook a variety of about one hundred and sixty-eight externally funded projects from different Government and non-Government organizations like United Nations Development Programme; UNICEF; Environment for Development Initiatives (EfD), Sweden; The Nature Conservancy, USA; CSIRO, Australia; Tokyo International University; Warwick University (ESRC, UK grant); Intel, USA; IBM, USA; American Express; Toyota Kirloskar Auto Parts Pvt. Ltd; BHEL WRI, Trichy; Indo-French Centre for Applied Mathematics; ISRO; ISRO-Chandrayaan; Department of Atomic Energy (DAE)Board of Research in Nuclear Sciences, Govt. of India; Board of Practical Training (ER), Under Minister of HRD, Govt. of India; Department of Atomic Energy, Govt. of India; Department of Biotechnology, Government of India; Digital India Corporation, Ministry of Electronics and Information Technology, Govt. of India; Airport Authority of India; Science and Engineering Research Board, Govt. of India; ITPAR-IV, Government of India; Research Center Imarat, DRDO, Government of India; Department of Science and Technology, Govt. of India; Department of Science & Technology and Biotechnology, Govt. of West Bengal; Department of Biotechnology, Govt. of West Bengal; Bhabha Atomic Research Center; Foundation for Basic Research (RFBR); National Board for Higher Mathematics; Indian Council of Agricultural Research; Indian Council of Social Science Research; Indian National Science Academy, New Delhi; Election Commission of India; Indian Oil Corporation; Delhi Judicial Academy; Finance Department (Revenue), Government of West Bengal; Directorate of Economics and Statistics, Raipur, Chhattisgarh; Hewlett Packard Inc; Caterpillar Pvt. Ltd, India; Larson & Toubro Ltd, India; Ministry of Agriculture and MSSRF, Chennai; Philips Carbon Black, Baroda; Serum Institute; HEG, Bhopal; Associated Capsule, Dahanu; VK Technology, Pune; NTPC, Noida; Bharat Electronics, Bangalore; Mother Dairy, Delhi; Jacobs Foundation; Timken Engineering & Research India, Chennai; Srichakra Tyres, Madurai; Eaton Technology, Pune; Bajaj Auto; Springer Nature; Jai Balaji, Durgapur; TCS; TATA Steel; RS Software (India) Limited; TVS

Motors, Hosur; FIAT India, Pune; HAL Management Academy; BIOCON Ltd, Bangalore; HBL Power Systems Ltd; ; Syngene International; Walvoil Fluid Power; Toyota Industries Engine India Ltd; Coal India Limited; Manthan Software Services; LKQ India; Lakshmi Machine works, Advance Technology Centre, Coimbatore; Brocade India Polytex Pvt Ltd, Palakkad; Fluid Control Research Institute, Palakkad; MYK, Hyderabad; SRF Limited, Trichy; SRC, Salem; Brakes India, Chennai; Gilbarco Veeder Root India Pvt Ltd, Coimbatore; Kalpataru Power and Transmission Ltd.; Hindalco Industries Ltd; JSW Steel Limited, Dolvi Works; Tal Manufacturing Solutions Ltd.; Larsen and Turbo Limited; Controller Of Naval Armament Inspection; Vertellus Specialty Materials (India) Pvt. Ltd.; L & T – MADH; GIA Ltd; L&T Mysore; L&T-(Electrical & Automation)-Powai; ERNST & YOUNG LLP; ABM Knowledge ware Limited, Mumbai; Hilti Manufacturing India Pvt. Ltd.; Grasim Industries Limited; Hindustan Unilever Ltd; L&T Powai; Pulp & Fibre Innovation Centre, Grasim, Mumbai; ITC Limited, PSPD, Bhadrachalam, AP etc.

### 13. Seminars, Workshops, Conferences, Symposiums etc. organized

During the year, the Institute organized several seminars, workshops, conferences, symposiums with the participation of leading academicians/ scientists from India and abroad. A few of them are highlighted below:

- 4th International Conference on “*Computational Intelligence and Networks (CINE 2020)*”, Center for Soft Computing Research, Kolkata, February 27-29, 2020.
- Conference on “*7th India Biodiversity Meet*”, Agricultural and Ecological Research Unit, Kolkata, November 19-21, 2019.
- Symposium on “*Artificial Intelligence for Business Intelligence*”, Statistical Quality Control and Operations Research Unit, Coimbatore held at Indian Chamber of Commerce and Industries, Coimbatore, May 07, 2019.
- Symposium on “*3rd Annual Research*”, Agricultural and Ecological Research Unit, Kolkata and Sociological Research Unit, Giridih , July 16, 2019.
- Symposium on “*Clinical Research Methodology and Medical Writing, Protocol to Publication Conceptual Understanding of Statistical – 2019*”, Statistical Quality Control and Operations Research Unit, Coimbatore, held at Taj Venanta, August 24-25, 2019.
- Symposium on “*Climate Change and Disaster Management in Coastal Areas*”, Agricultural and Ecological Research Unit, Kolkata, February 04, 2020.
- IEEE-CEDA Winter Symposium on “*Advanced Formal Techniques along the Design Flow*”, Advanced Computing and Microelectronics Unit, Kolkata, December 09, 2019.
- International Workshop on “*Advanced Machine Learning Techniques for Climate Informatics*”, Center for Soft Computing Research, Kolkata, November 04-06, 2019.

- ISI-UTS Joint International Workshop on “*Machine Learning and its Applications to Pattern Recognition*”, Computer Vision and Pattern Recognition Unit, Kolkata, November 14-15, 2019.
- Workshops on “*Geropsychology*”, organized jointly by Psychology Research Unit and Biological Anthropology Unit, Kolkata, September 12, 2019.
- Workshop on “*8th Delhi Macroeconomics*”, Economics and Planning Unit, Delhi, October 17-18, 2019.
- Workshop on “*Statistical Techniques in Research Methodology*”, Statistical Quality Control and Operations Research Unit, Mumbai, October 21-24, 2019.
- Workshop on “*5th Annual CECFEE Research & Policy*”, Economics and Planning Unit, Delhi, held at Tezpur, Assam, November 10-11, 2019.
- Workshop on MoSPI Projects “*Developing an Appropriate Structure Preserving Estimation (SPREE) Method for Estimating Domain-Level Aggregates from NSSO Household Surveys and Developing an Appropriate Methodology for Estimating Proportion of Villages with Specific Infrastructure Facility*”, Sampling and Official Statistics Unit, Kolkata, November 21, 2019 at ISI, Kolkata.
- Workshop on “*Machine Learning and Mathematical Morphology For Spatial Data Analysis*”, Systems Science and Informatics Unit, Bangalore, held at Dr. Ambedkar Institute of Technology, Bengaluru, November 21-22, 2019.
- Workshop on “*Design and Analysis of Experiment*”, Statistical Quality Control and Operations Research Unit, Kolkata, November 25-30, 2019.
- Workshop on “*Data Science in Finance*”, Applied Statistics Unit, Bangalore, held at Chennai Mathematical Institute, December 18-20, 2019.
- Workshops on “*Quality and Reliability in Business*”, Statistical Quality Control and Operations Research Unit, Coimbatore, held at Indian Chamber of Commerce and Industries, Coimbatore, May 26, 2019.
- 5th ISI-IGC Summer School in “*Development Economics*”, Economics and Planning Unit, Delhi held at ISI Delhi, July 05-09, 2019.
- 6<sup>th</sup> Summer School on “*Computer Vision, Graphics and Image Processing*”, Electronics and Communication Sciences Unit, Kolkata, May 30-July 12, 2019.
- Winter school on “*Use and Applications of SPSS*”, Biological Anthropology Unit, Kolkata, January 27-31, 2020.

- CALDAM Indo-French Pre-Conference School on “*Algorithms and Combinatorics*”, Advanced Computing and Microelectronics Unit, Kolkata held at IIT, Hyderabad, February 10-11, 2020.
- Certification Programme on “*Business Analytics with a focus on Data Science, Machine Learning, Artificial Intelligence*”, Statistical Quality Control and Operations Research Unit, Hyderabad, February 23-January 23, 2019.
- Training Programme on “*Environmental Data Interpretation, Compilation and Reporting*”, Statistical Quality Control and Operations Research Unit, Delhi, February 03-07, 2020.
- Training Programme on “*Survey Methodology and Data Analytics*” for Probationers of Indian Statistical Service (40th Batch), NSSTA, MOS&PI, Govt. of India, Sampling and Official Statistics Unit, Kolkata held at OLC at Statistics, Netherlands, September 01-07, 2019.
- Training Programme on “*Statistics for Data Science*”, Statistical Quality Control and Operations Research Unit, Mumbai, held at L&T, Hazira, March 04-April 04, 2019.
- Training Programme on “*Prospective Prediction Model of Fetal Weight and Its Accuracy in Term Birth Weight from Clinical Observation*”, Statistical Quality Control and Operations Research Unit, Coimbatore, held at KG Hospital and Post Graduate Institute, April 01-September 15, 2019.
- Training Programme on “*Official Statistics (for Officials from Directorate of Economics and Statistics, Govt. of Assam)*”, Applied and Official Statistics Unit, North-East Centre, Tezpur, November 25-29, 2019.
- Training Programme on “*National Sample Surveys*” for Government Officials of the North-Eastern States, Applied and Official Statistics Unit, North-East Centre, Tezpur, Nov 20-Jan 24, 2020.
- Training Programme on “*Statistical Analysis Program*” Statistical Quality Control and Operations Research Unit, Mumbai, held at Grasim Industries Limited-Pulp & Fibre Innovation Centre, October 02-November 02, 2020.
- Foundation Course on “*Predictive Modeling using Python (PM-05)*”, Statistical Quality Control and Operations Research Unit, Bangalore, November 27-30, 2019.
- Foundation Course on “*Machine Learning using Python (ML-01)*”, Statistical Quality Control and Operations Research Unit, Bangalore, October 02-February 15, 2020.

#### 14. Publication of the Institute

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. This quarterly journal, with ISSN 0976-8378, is devoted to original research



articles in Applied Statistics, Mathematical Statistics and Probability. 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. Beginning 2010, the Institute has been collaborating with Springer for printing and marketing the international edition of *Sankhyā*, in both prints and electronic editions. Free access to the articles of every editions of *Sankhyā* is available through the *Sankhyā* website ([sankhya.isical.ac.in](http://sankhya.isical.ac.in)).

#### 15. Scientific Papers and Publications

During the year, about 592 scientific papers were published in different journals of national and international repute.

#### 16. Scientific Assignments Abroad

Seventy-seven Scientists of the Institute visited a number of foreign countries either on invitation or under cultural exchange programme for attending international seminars and conferences. Most of them presented scientific papers and delivered lectures in those seminars and conferences. Countries visited by ISI faculty members were Australia, Bangladesh, Bulgaria, Canada, China, Columbia, Croatia, Czech Republic, Denmark, France, Finland, Germany, Hong Kong, Indonesia, Israel, Italy, Japan, Malaysia, Morocco, Netherlands, Norway, Nepal, Poland, Portugal, Russia, Romania, Slovakia, Sri Lanka, South Korea, South Africa, Spain, Sweden, Switzerland, Singapore, Tukey, Taiwan, UAE, Ukraine, Uruguay, UK, USA and a few others.

#### 17. Visiting Scientists

Two hundred and sixteen scientists from Bangladesh, Canada, China, Croatia, Denmark, France, Germany, Iran, Israel, Italy, Poland, Spain, Switzerland, Singapore, South Africa, Slovakia, Sweden, USA, UK and India visited the Institute to attend various Workshops, Conferences, Seminars etc. and also to participate in collaborative research, teaching and other scientific activities of the Institute.

#### 18. Recognition to ISI Scientists

In appreciation and recognition to the high standard of research and scientific excellence maintained by the researchers of the Institute, several faculty members received laurels in the forms of Awards, Fellowships from Government of India and organizations/bodies/universities of national and international repute like NSC, NISER, IEEE, IISA, INSA, TWAS, DST, etc. Several faculty members served as Visiting Scientist, Honorary Professor, Visiting Professors in various universities in US and Europe; Indian Academy of Sciences; Indian National Science Academy etc. Besides, many faculty members were invited by national and international Institute/bodies to act as chairman, members, chief editors, editors in committees/editorial boards etc. Among those, some of the most notable recognitions earned by the faculty members during the year 2019-2020 are indicated below: -

- N. Gupta has been awarded *Shanti Swarup Bhatnagar Prize* in Mathematics, 2019.
- A. Mukhopadhyay has been awarded *Mahalanobis Memorial Gold Medal*, Indian Econometric Society.
- B.K. Roy, Former Director has been selected *Chairman, National Statistical Commission*, 2019 for 3 Years.
- S. Bandyopadhyay has been elected *Fellow, The World Academy of Sciences*, 2019.
- P.P. Majumder, Emeritus Professor has been elected as *National Science Chair*, GoI, 2020-2023 and selected as *Co-chair of WHO Expert Committee on Artificial Intelligence in Healthcare, Ethics*, 2019.
- S.K. Pal, Emeritus Professor and Ex-Director has been elected as *National Science Chair*, GoI, 2020-2023.
- K.B. Sinha, Former Director and Emeritus Professor has been awarded *Srinivasa Ramanujan Medal*, INSA, 2019.
- A. Ghosh has been awarded *NASI-Young Scientist Platinum Jubilee Award* in Earth Science, Mathematics and Physics, 2019.
- R.S. Hazra has been awarded *IISA Young Statistical Scientist Award* in Theory & Methods category, 2020.
- R. Sen has been awarded *IISA Young Statistical Scientist Award* in Applications Category, 2019.
- R. Munshi has been elected *Fellow, Indian National Science Academy*, 2019.
- R.S. Hazra has been elected *Fellow, Indian Academy of Sciences*, 2019.
- A. Ghosh has been elected *Fellow, National Academy of Sciences, India*, 2019.
- A. Goswami has been elected *Fellow, National Academy of Agricultural Sciences*, 2019-2020.
- E. Somanathan has been elected *Senior Visiting Fellow (Honorary), Centre for Policy Research (CPR) Delhi*, 2019.
- M. Swaminathan has been awarded *Ban Ki Moon Award* for Women's Empowerment, Asia Initiatives New York, 2019 and selected Part-time non-official *Director*, Board of Union Bank of India, 2018-20.
- S. Ghosh has been elected *Jury Member, E.W. Beth Dissertation Prize*, 2019.
- S. Mitra has been selected *IEEE CIS Distinguished Lecturer*, 2020-2023 and *Chair, Elect*, IEEE Kolkata Section, 2019-2020.

- T. Karthick has been furnished with *DST-SERB-MATRICES Grant*, 2019 for 3 years.
- B. Basu has been elected *Fellow, West Bengal Academy of Sciences*, 2019.
- S. Ghosh has been elected *Fellow, West Bengal Academy of Sciences*, 2019.
- R. Munshi has been selected *Adjunct Professor*, School of Mathematical Sciences, National Institute of Science Education and Research.
- A. Rajagopal has been awarded *Dynamic Indian of the Millennium Award* for Applied Statistical Analytics for Quality, Reliability, Research Methods for Business Process Excellence and Systems, 2019.
- F. Afridi has been selected *Lead, Academic*, International Growth Centre (India program), Since 2020.

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