DEBARATI SEN

ASSOCIATE PROFESSOR

G. S. S. SCHOOL OF TELECOMMUNICATIONS
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SYNOPSIS

RESEARCH INTERESTS

Electronics & Telecommunication Engineer with more than 16 years of **Academic**, **Research**, and **Industrial** experiences. Research interest lies broadly in the areas of **Wireless and Optical Communications including Interdisciplinary Computing**

- 5G / 6G Communications
- AI enabled Wireless
- Millimeter Wave Communications
- Terahertz Communications
- Visible Light Communications
- Critical Communications

CAREER HIGHLIGHTS

⇨ EDUCATION : Ph.D. (Telecommunication Engineering) from IIT-Kharagpur, India

⇨ PROFESSIONAL INVOLVEMENT :
- Sr. Chief Engineer, Samsung Research, Bangalore, India
- Postdoctoral Research Fellow, Chalmers University of Technology, Sweden

⇨ ACADEMIC AWARDS :
- National Doctoral Fellowship, MHRD, Govt. of India
- University Gold Medal from IIEST, Howrah (formerly BESU)

⇨ PROFESSIONAL AWARDS :
- Faculty Excellence Award, IIT Kharagpur
- DAAD-IIT Faculty Exchange Fellow, Technical Univ. Munich, Germany
- Young Engineers Award, IE(India)

⇨ RESPONSIBILITIES :
- Editorial Board Member of two International Journals
- IEEE Kharagpur Section (R10) – Chair (2020), VC (2019), Secretary (2018)

⇨ EXPERIENCES (Years/Months) : Teaching (12/06); Research / Industrial (04/00)

⇨ PROJECTS INVOLVED : Ongoing – 09; Completed – 12

⇨ ACADEMIC GUIDANCE : Ph.D. –6 (Awarded), 11 (Ongoing / Submitted); Masters' –33 (Completed & Ongoing)

⇨ PUBLICATIONS : Journal Papers – 56; Conference Papers – 67; Patent Applications – 20

KEY DELIVERABLES

EDUCATION

- Ph.D. (Telecommunication Engineering)   June 2010
     Indian Institute of Technology Kharagpur, India

- M.E. (Electronics and Telecommunication)   October 2004
     IIEST, Shibpur, Howrah, India (Formerly BESU)

PROFESSIONAL EXPERIENCE

- Indian Institute of Technology, Kharagpur, India
  - Associate Professor,   G. S. S. School of Telecommunications — Since May 2019
  - Assistant Professor,   G. S. S. School of Telecommunications — June 2013 to May 2019
- Samsung Research, Bangalore, India
  - Sr. Chief Engineer,   Frontier Research Group — April 2012 to May 2013
- Chalmers University of Technology, Gothenburg, Sweden
  - Postdoctoral Research Fellow,   Dept. of Signals and Systems — Feb. 2011 to Feb. 2012
- Samsung India Software Operations, Bangalore, India
  - Chief Engineer,   Network & OS Part — May 2009 to Jan. 2011
- St. Thomas' College of Engineering & Technology, Kolkata, India
  - Lecturer,   Dept. of Elect. & Comm. Engineering — July 2002 to July 2005

ACADEMIC VISITS ABROAD

- Monash University, Melbourne, Australia
  - Visitor – Associate Professor, Department of Electrical and Computer Systems Engineering — (2019)
- Technical University of Munich, Germany
  - DAAD-IIT Faculty Exchange Fellow, Institute for Communications Engineering — (2014)

AWARDS AND HONOURS

- Faculty Excellence Award, IIT Kharagpur for Outstanding Contributions in Teaching, Research & Inst. Devel.   (2020)
- Won UAV Innovation Challenge (Stage-I) (Sponsored by IEEE VTS: Panda K. G. et. al., Mentor – D. Sen)   (2020)
- Distinguished Woman in Engineering Award by Venus International Foundation, VIWA 2020   (2020)
- Qualcomm Innovation Fellowship, India   (2017)
- Recognized for Highest Number of Patents (Women Faculty), Office of AA & IR, IIT-Kharagpur   (2017)
- 'Best Paper Award (Honorable Mention)' at IEEE ANTS 2016, Bangalore, India   (2016)
- DAAD-IIT Faculty Exchange Fellow, Technical University of Munich, Germany   (2014)
- IETE N V G Memorial Award   (2013)
- Biography included in Marquis Who's Who in the World, USA, 29th Edition   (2012)
- 'Best Paper Award' at Samsung Tech. Conference, Seoul, South Korea   (2010)
- IE(I) Young Engineers Award   (2010)
- 'Award of Excellence' at Samsung Research, Bangalore, India   (2010)
- 'Spot Award for Excellence in Research' by Samsung Research, Bangalore, India   (2010)
- National Doctoral Fellowship (NDF) of AICTE, Govt. of India   (2006 – 2009)
- Young Scientist Travel Support by DST, Govt. of India   (2008)
- Doctoral Fellowship, Ministry of HRD, Govt. of India   (2005 – 2006)
- University Medal from IIEST, Howrah (Formerly BESU) for 1st in ME   (2004)
- Medal & Late S. Mukherjee Memorial Scroll of Honour from IE(I) for Bachelor Degree Exam.   (2001)
- National Scholarship Certificate by Govt. of India for Secondary Board Examination   (1991)

PROFESSIONAL MEMBERSHIPS

- Senior Member, IEEE (USA)   (80544199)
- Fellow, IE (India)   (F-1227102)
- Fellow, IETE (India)   (F-502454)
- Member, OWSD, hosted by TWAS, a programme unit of UNESCO   (9637)
- Life Member, Indian Science Congress Association   (L39329)

RESEARCH AND ACADEMIC STUDENT MENTORING

SUMMARY

- Postdoctoral Level   :   01 (In progress)   01 (Completed)
- Doctoral Level   :   06 (Awarded)   01 (Submitted)   10 (In progress)
- Masters Level   :   25 (Completed)   00 (Submitted)   07 (In progress)
- UG Level   :   14 (Completed)   03 (In progress)
- Internship   :   23 (Completed)

POSTDOCTORAL RESEARCHER

- Dr. Saswati Ghosh   Wideband Antenna Design   (2016 – Continuing)

VISITING RESEARCHER

- Dr. N. Sathish Kumar   Millimeter Wave Beamforming Techniques
  (*INSA Visiting Scientist*)   Professor, ECE, Sri RK Engg. College, Coimbatore   (01 Oct – 31 Dec, 2022)

RESEARCH SCHOLARS (PRESENT / PAST WITH THEIR FIRST EMPLOYMENT)

- Sucharita Chakraborty   Joint Synchronization & Channel Estimation for DMIMO-OFDM   (07/13 – 02/19)
  Systems
  Completed Postdoctoral Research at Linköping University, Sweden
  Presently working as Scientist, ISRO, SAC, Ahmedabad

- Rakesh R. Thankamani   Energy Efficient Millimeter Wave System and Protocols   (12/13 – 08/19)
  (Jointly with Prof. G. Das, GSSST)
  Completed Postdoctoral Research at Monash University, Australia
  Presently working as Chief Engineer at Samsung Research, Bangalore

- Md. Shajahan Kutty   Millimeter Wave Beamforming: Algorithms and Performance Analysis   (07/14 – 09/20)
  Presently working as Asst. Professor at Goa College of Engg., Calicut, Goa

- Khushboo Mawatwal   Channel estimation and resource allocation in Massive MIMO   (07/14 – 06/21)
  Small-cell networks
  (Jointly with Prof. R. Roy, Dept. of ECE)
  Presently working as Technical Lead at Samsung Research, Bangalore

- Preety Priya   Estimation and Detection for mmWave Systems with   (07/16 – 04/22)
  Power Amplifier Nonlinearities
  Presently a Postdoctoral Researcher at Monash University, Australia

- Boddupelly Srinivas   Channel Estimation in Massive MIMO Systems with Low-Resolution ADCs (12/15 – 09/22)
  (Jointly with Prof. S. Chakrabarti, GSSST)
  Presently working as Sr. Manager, HAL, Hyderabad

- M. L. Naresh Kumar — Working on MIMO Visible Light Communication detector design (Jointly with Prof. P. Mohapatra, Dept. of EE, IIT-Tirupati) — (07/16 – Continuing)

- Kirtan Gopal Panda — Working on Resource allocation in Cloud RAN — (01/17 – Continuing)

- Vinnakota Venu Balaji — Fronthaul Design of Cloud RANs based on Performance Analysis — (07/15 – Continuing)

- Chandrashekhar Rai — Working on mmWave MIMO RADAR — (07/17 – Continuing)

- Ch Santosh Reddy — Working on AI in Wireless Communication (Jointly with Prof. C. Singhal, Dept. of ECE) — (01/19 – Continuing)

- Soumyasree Bera — Working on Channel Estimation for TWR-aided mmWave Communication with Imperfect Beam alignment (Jointly with Prof. A. K. Dutta, GSSST) — (01/19 – Continuing)

- Soujanya Thallapalli — Working on Nonlinear Estimation and Beamforming Techniques — (07/19 – Continuing)

- Shrayan Das — Working on Terahertz Channel Modelling and Waveform Design for High Mobility Wireless Communication (Jointly with Prof. E. Viterbo, Dept. of ECSE, Monash University, Australia) — (10/20 – Continuing)

- Mahima Patel — Working on Millimeter Wave Technology (Jointly with Prof. M. Mandal, Dept. of ECE) — (07/21 – Continuing)

- Guntapalli Badaraiah — Working on Unmanned Aerial Vehicle (UAV) Communications — (01/22 – Continuing)

- Swastik Chakroborty (*PMRF Scholar*) — Working on Channel Estimation for IRS assisted Multi-user mmWave Wireless Communication — (05/22 – Continuing)

M.S. STUDENTS

- M. Rahaman Laskar — Classification, Regularization, and Estimation of Target Parameters in Cognitive Radar
Presently a Graduate Student at IIT Kharagpur — (01/18 – 09/20)

- Shrayan Das — Design of Last Minute Backup Algorithms for Endangered Datacenter Networks
Presently a Graduate Student jointly with IIT Kharagpur & Monash University, Australia — (01/17 – 10/20)

- Bharat Dwivedi — Working on Distributed Radio Network (Jointly with Prof. S. Chakraborty, Dept. of CSE) — (01/19 – Continuing)

- Ankana Das — Working on Performance Analysis of CRAN (Jointly with Prof. S. Chakraborty, Dept. of CSE) — (01/20 – Continuing)

- Aunullah Qaiser — Working on Terahertz Communications — (10/20 – Continuing)

M.TECH. STUDENTS

- Ponnada Subha Tushara — Improvement on Sum Capacity in OSDMA-S Based Downlink Transmission — (04/14)

- Biplob Sarkar — Design & Implementation of Adaptive PCM Clock & Data Recovery for Wireless Telemetry (Jointly with Prof. S. Chakrabarti, GSSST) — (06/14)

- Mada Sravani Sowjanya — RADAR Extended Target Estimation — (04/16)

- Kondalarao Chunchu — Power Iteration Based Beamforming Scheme for mmWave Communications — (04/16)

- Deepak Singh — Comparative Analysis of Different Channel Estimators in Estimate & Forward Multi-Relay DMIMO-OFDM System — (04/16)

- Pragati Patidar   Channel Estimation in GBPS Wireless Local Area Network (IEEE 802.11ad)   (06/16)

- Tankala R. Rao   LTE and Wi-Fi Coexistence in 5GHz Band   (04/17)

- Ekta Dutta Banik   Design of Prediction Algorithm for State and Target Spectra for Cognitive RADAR Systems   (05/17)

- Ruchita Kachhap   Localization & Comm. using Wireless Networks as an Application to Disaster Management (Jointly with Prof. S. Mukhopadhyay, Dept. of EE)   (05/17)

- Naincy Kamal Kujur   Iterative SAGE Based Joint MCFOs and Channel Gains Estimation for DMIMO-OFDM Systems   (05/17)

- Suman Mondal   Cloud Radio Access Network, Prototype Implementation & Performance Analysis (06/17) (Jointly with Prof. S. Chakraborty, Dept. of CSE)

- Swagatjyoti Sahoo   Design of Front-End of Wireless Data Link at 60GHz for Indoor Communications (05/18)

- Aprajeeta Shah   Disaster Management and Surveillance using Ad-Hoc with Rsapberry PI   (05/18)

- Shashank Verma   Implementation of Carrier Frequency Offset Estimation Algorithm in Presence of PA Non-linearity for mmWave QAM System   (05/19)

- Jagdish Seervi   LPC Based Fronthaul Signal Compression in Cloud Radio Access Network   (05/19)

- Nitish Kumar   Beam Alignment Techniques for Millimeter Wave (Jointly with Prof. A. Adhya)   (05/19)

- Shashank Sourabh A.   Performance Analysis of OTFS Modulated System   (06/20)

- Vaka Maneeswari   Implementation of LPC Based Fronthaul Signal Compression in Cloud RAN   (06/20)

- Krupa S. Raj Rayana   SBL based Channel Estimation for Millimeter Wave MIMO System   (04/21)

- Amulya Wilson   Efficient 3D-Deployment and ML Based Post-Deployment Planning of UAV Networks for Guaranteed QoS Demand   (04/21)

- Sandeep Issarapu   Game Theoretic based Resource Allocation in Small Scale Networks   (04/21)

- Kancharana Manoj Kr.   Evaluation of OFDM Modulation Schemes for Indoor VLC Channels with Random Orientation of Mobile Devices   (04/22)

- Swastik Chakroborty   Optimisation of Spectral Efficiency for IRS Aided mm-Wave Comm. System   (04/22)

- Moodu Veerabhadru   Working on AI in Wireless Communication   (Continuing)

- Ayush Bhatia   Working on AI in Wireless Communication   (Continuing)

- Souvik Pramanick   Working on AI in Wireless Communication   (Continuing)

- Shubham Kushwaha   Working on AI in Wireless Communication   (Continuing)

SENIOR UNDERGRADUATE PROJECTS

- Ayush Chowdhury   Performance Analysis of Energy Efficient Sub-band Based Architecture for (12/14) 60 GHz Millimeter Wave Communications

- Shyla Gangwar   Power Efficient OFDM mmWave Comm. with Low Resolution & Subsampling ADC (04/16)

- Naincy Kamal Kujur   Massive MIMO Systems   (05/16)

- Ishan Jain   Implementation and Analysis of a Bayesian Approach for Non-linear Equalization and Signal Detection in Millimeter Wave Communications   (04/17)

- Aprajeeta Shah — Performance Analysis of Cloud Radio Access Networks (05/17)
- Pranav Chavan — Design of Communication Module for Health Monitoring System (05/17)
- Ruchita Kachhap — Indoor Localization using Wireless Techniques (05/16)
  (Jointly with Prof. S. Mukhopadhyay, Dept. of EE)
- Rupesh Ranjan — OFDM Based Sub-sampled Sub-band Radio Architecture for Power Efficient Millimeter Wave Communications (05/16)
- Medapati Swetha — Performance Analysis of Multi-GBPS Millimeter Wave WLAN System (05/16)
- Ganji D. M. Nagarjuna — Design of Transceiver and Filter for Millimeter Wave Communication using GFDM Modulation (04/17)
- Sharath Ch. Vemula — Communication between Drones for Disaster Management (06/17)
- Naga Nithin Manne — Cloud RAN Implementation, Prototype Implementation & Performance Analysis (06/17)
  (Jointly with Prof. S. Chakraborty, Dept. of CSE)
- Shashank Verma — Implementation of Millimeter Wave QAM System Incorporating Non-linearity of Power Amplifier (11/17)
- Boddupalli S. Vaishnavi — Design and Implementation of Blind Equalizer for Multipath Mitigation in Telemetry (05/20)
- Ashutosh Pradhan — Coverage Overlapping Problem In Interference Aware UAV Networks (10/21)
- Anirudh Roy — Implementation of DoA Estimation Algorithm Using Fast Fourier Transform (04/22)
- Kalyan Raman Jogadenu — Implementation of Channel Estimator for OTFS System (04/22)

RESEARCH EXPERIENCE FOR UNDERGRADUATES

- Diptangshu Chakraborty — Dept. of ECE, IIEST, Shibpur, Howrah (05/15 – 07/15)
- Somtirtha Mukherjee — Dept. of ECE, Jalpaiguri Govt. Engg. College (06/16 – 08/16)
- Ketan Patel — Dept. of ECE, Jalpaiguri Govt. Engg. College (06/16 – 08/16)
- Dumpa Sandeep Kumar — Dept. of E&ECE, IIT Kharagpur (11/16 – 04/17)
- Tarun Kumar — Dept. of E&ECE, IIT Kharagpur (11/16 – 04/17)
- Nikhil Kumar — Dept. of ECE, NIT Silchar (05/17 – 07/17)
- Yash Nandan Singh — Dept. of ECE, NIT Silchar (05/17 – 07/17)
- G. U. S. Priyanka — Dept. of ECE, K. L. University, Vijaywada (05/17 – 06/17)
- Aunullah Qaiser — Dept. of ECE, P. M. Engg. College, Brahmapur (12/17 – 01/18)
- Prantik P. Samrah — Dept. of CSE, NIT Silchar (12/17 – 01/18)
- Aunullah Qaiser — Dept. of ECE, P. M. Engg. College, Brahmapur (04/18 – 06/18)
- Swastik Chakraborty — Dept. of ECE, Jadavpur University, Kolkata (05/18 – 07/18)
- Varsha Bharti — Dept. of ECE, IIEST, Shibpur, Howrah (05/18 – 07/18)
- Swapnendu Paul — Dept. of ECE, IIEST, Shibpur, Howrah (05/18 – 06/18)
- Prabal Lahon — Dept. of CSE, NIT Silchar (05/19 – 07/19)
- Inzamamul H. Mondal — Dept. of ECE, NIT Silchar (05/19 – 07/19)

▪ Tarun Singhania	Dept. of ECE, NIT Silchar		(05/19 – 07/19)
▪ Protyush P. Chowdhury	Dept. of ECE, NIT Silchar		(12/19 – 01/20)
▪ Sandeep Bolla	Dept. of ECE, NIT Silchar		(12/19 – 01/20)
▪ Shashwat Jain	Dept. of E&ECE, IIT Kharagpur		(06/20 – 01/21)
▪ Kaustav Biswas	Dept. of ECE, SOA University, Bhubaneswar		(02/22 – 04/22)
▪ Phakazip R. Shimray	Dept. of EE, NIT Silchar		(05/22 – 06/22)
▪ Rohit Roy	Dept. of ECE, NIT Silchar		(05/22 – 06/22)

RESEARCH ACTIVITIES AND PROFESSIONAL RESPONSIBILITIES

SPECIALIZATION

▪ Wireless and Optical Communication including Interdisciplinary Computing

RESEARCH INTERESTS

▪ 5G / 6G Communications	▪ Millimeter Wave and Terahertz	▪ Critical Communications
▪ AI for Wireless Communication	▪ Visible Light Communications	▪ Large MIMO Systems
▪ Short Range Communications	▪ Cloud Radio Access Networks	▪ Coherent Optical Communications

RESEARCH STATEMENT IN BRIEF

▪ Broadly focuses on Wireless and Optical Communication including Interdisciplinary Computing, mostly on 5G / 6G Communications, AI enabled Wireless, Millimeter Wave Communications, Terahertz Communications, Green Communications, Large MIMO, Cloud RAN etc. More specifically, in *Millimeter Wave and Terahertz Communications*, the focus is on energy efficient Radio Architecture and MAC protocol design, devising Beamforming Algorithm, Performance and Coverage Analysis of Networks. In *Large MIMO Systems*, focuses on Synchronization and Channel Estimation, Joint Estimator-Decoder Design, Cross-Layer Optimization, Game Theoretic Resource control issues in massive MIMO. In *Cloud RAN*, the focus is on UAV assisted distributed RAN design through dynamic functional split, Algorithm design for content selection and cache memory allocation, UAV placement strategy for guaranteed QoS demand. In *AI enabled Wireless Communications*, focuses on MARL based Channel Estimation and user scheduling for Distributive MIMO, MARL assisted Distributed Beamforming, Denoising with Multi-task Learning and Adversarial Auto-Encoder.

MEDIA OUTREACH

▪ **Press Release**

The Economic Times (Click Here)	Hindustan Times (Click Here)
India Times (Click here)	ET Prime (Click Here)
ET Telecom (Click Here)	ET CIO (Click Here)

▪ **Media Coverage**

DD News (19:16 - 21:07) (Click Here)	NDTV (Click Here)
ABP Education (Click Here)	Yahoo News (Click Here)

▪ **Publish in Chronicles**

Carrier 360 (Click Here)	The Week Magazine (Click Here)
Outlook Magazine (Click Here)	Gadgets Now (Click Here)
The KGP Chronicle (The Official News Platform of IIT Kharagpur) (Click Here)	

STANDARDIZATION ACTIVITIES

- Member, Technical Expert Committee, Digital Communication Innovation Square (DCIS) Scheme under Champion Services Sector Scheme (CSSS), under Dept. of Telecomm. (DOT), TCOE (Telecom Centers of Excellence) India, Govt. of India

- Member, Consultative Committee, under Dept. of Telecomm. (DOT), Telecommunication Engineering Center (TEC), Govt. of India for adoption of TSDSI's 5Gi as National Standard

- Member of Radio Network Evolution and Spectrum (RNES) working group of Telecommunications Standards Development Society, India (TSDSI) since 2014. Actively participated in 5G Standardization activities at National and International level through TSDSI, TCOE (Telecom Centers of Excellence) India, and ITU-R. [*TSDSI and TCOE are registered Govt. bodies for Telecommunication Standardization Activities*]

  ⇨ Contributed as India Contribution in International Telecommunication Union, Radiocommunication Sector (ITU-R) as Vision 2030 Document for 'A case study for Sub-THz Channel Modeling' accepted at ITU as SWG under 'DG Above 92 GHz, Start Frequency' (Reference ITU-R-WP5D Report towards IMT Above 100 GHz)

  ⇨ Contributed in 5G Channel Model Evaluation for 3GPP accepted by ITU-R. TSDSI transposed OneM2M (Release 2) specifications have been adopted as National Standards by Telecom Engineering Centre, Dept. of Telecomm., Govt. of India notified as per O.M. No. 19-1/2019-STD/TEC/2 dated 17 Sept. 2020

  ⇨ Technical proposal on 'Functional Split and Fronthaul Interface in FBS Driven C-RAN for 5G and Beyond' has been approved as Study Work Item Contribution (SWIC 806) (Reference Document No. TSDSI-SGN-WI1-[NIP270]-V2.0.0-20220308)

  ⇨ Technical proposal on 'UAV Assisted C-RAN for 5G and Beyond' has been approved as Study Work Item Contribution (SWIC 726) (Reference Document No. TSDSI-SGN-SWIC726-V1.0.0-20210524)

  ⇨ Involved in TSDSI roadmap activities and participated in Roadmap Workshop 2020, 2022 and presented technical proposal on Terahertz Super-Massive MIMO Communication Systems for Outdoor and Indoor Environment

- Involved in standardization activity for IEEE802.15TG6 Body Area Network (BAN), particularly on Emergency Handling Mechanism which ensured emergency signal detection under critical health situation from implant as well as wearable devices during stay at Samsung Research, Bangalore. *The solution is considered as one of the important IPs for IEEE BAN specification*

INVOLVEMENT IN NATIONAL PROGRAMME

- NM-ICPS Program of DST, GoI : Involved in Technology Innovation Hub (TIH) on AI and ML for Interdisciplinary Cyber-Physical Systems (AI4ICPS) at IIT Kharagpur under the aegis of the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS), GoI

- TCOE India 5G RIT Program : Contributed in TSDSI and TCOE India 5G Radio Interface Technology "5Gi" approved by SG5 of International Telecommunication Union – Radiocommunication Sector (ITU-R) as a part of upcoming ITU-R Recommendation M.[IMT-2020.SPECS]

- National Program on 5G : Based on National Digital Communication Policy (NDCP) 2018, and Make in India initiative by GoI through MeitY funded "5G Research and Building Next Gen Solution for Indian Market" (Sept. 2015 to Sept. 2018, extended by a year to Sept. 2019), a new initiative has been adopted on "Next Generation Wireless Research and Standardization on 5G and Beyond". Participating institutes includes CEWiT-IIT-Madras, IIT-Bombay, IIT-Madras, IIT-Hyderabad, IISc.-Bangalore, IIT-Kanpur, IIT-Delhi, and IIT-Kharagpur. Actively Involved and contributed in this national program

EDITORIAL ACTIVITIES

- Editorial Board Member of International Journal IJUWBCS by Inderscience Publishers (2008 – 2020)
- Editorial Board Member of Inter. Journal Proceedings of Open Library of Engg. Sciences (POLES) (2013 – 2015)

CONFERENCE / WORKSHOP ORGANIZING COMMITTEE MEMBERSHIP

- TPC – Communication Track Chair, IEEE ICMOCE 2023, May 26-28, Bhubaneswar, India (May 2023)
- Finance Chair, Int. Conf. on Distributed Comp. and Net. (ICDCN) 2023, Jan 04-07, Kharagpur, India (Jan 2023)
- TPC Co-Chair, IEEE ACTS 2021, Dec 15-17, Rourkela, India (Dec 2021)
- Coordinator – Communication Track, Symposium on AI and ICPS, (Aug 2021)
  Jointly organized by IIT Kharagpur TIH AI4ICPS and Indo German Science & Tech. Center, New Delhi
- General Co-Chair, ADCOM 2020, Dec. 16-18, Silchar, India (Dec 2020)
- Organizer, Workshop on 'Recents in Emergency Comm. and Future Roadmap', June 30, Silchar, India (June 2020)
- Organizing Co-Chair, IEEE ACTS 2020, Dec 04-06, Silchar, India (Dec 2020)
- TPC Co-Chair, National Conference on Communications 2020, Feb. 21-23, Kharagpur, India (Feb 2020)
- TPC Co-Chair, IEEE ICIIS 2019, Dec. 18-20, Peradeniya, Sri Lanka (Dec 2019)
- Oversight Committee Member, IEEE ICIIS 2018, Dec. 01-02, Ropar, India (Dec 2018)
- Publication Co-Chair, IEEE ANTS 2015, Dec. 15-18, Kolkata, India (Dec 2015)

KEYNOTE / PLENARY SPEECH / PANEL DISCUSSION

- Keynote Speech at TSDSI TDD Conf., 6G Wireless Systems: Vision, Requir. & Challenges, Nov. 07-10, 2022 (2022)
- Panel discussion on 'Spectrum avail. & harmonization for Next Gen Service', Nov. 10, 2022, TSDSI TDD Conf. (2022)
- Keynote Speech at SAEINDIA 5G Mobility Conference, Nov. 11-12, 2021 (2021)
- Panel discussion on 'Vision for 6G–Requirements., Use Cases, Applications', Oct. 26, 2021, TSDSI TDD Conf. (2021)
- Keynote Speech at TSDSI TDD Conf., Standard. for Digital Transformation in New Normal, Oct. 25-28, 2021 (2021)
- Invited Talk in Women in Engineering Session, IEEE NCC 2021, July 27-30, IIT Kanpur (Virtual) (2021)
- Panel discussion on '6G: Requirements and Use-Cases', May 08, 2021, IEEE Bangalore & IEEE Kharagpur (2021)
- Keynote Speech at IEEE ACTS 2020 Conference, Dec. 04-06, Silchar, India (Dec 2020)
- Keynote Speech at 25th Annual Inter. Conference ADCOM 2019, Sept. 05-09, Bangalore, India (Sep 2019)

SESSION CHAIRING

- IEEE VTC-2018 (Fall), Chicago, IL, USA, Aug. 27-30 (Aug 2018)
- IEEE VTC-2017 (Spring), Sydney, Australia, June 04-07 (June 2017)
- IEEE Globecom-2016, Washington DC, USA, Dec. 04-08 (Dec 2016)
- IEEE PIMRC-2015, Hong Kong, China, Aug. 30-Sept. 02 (Aug 2015)
- IEEE Globecom-2011, Houston, TX, USA, Dec. 05-09 (Dec 2011)
- IEEE VTC-2011 (Spring), Budapest, Hungary, May 15-18 (May 2011)
- IEEE Globecom-2010, Miami, FL, USA, Dec. 06-10 (Dec 2010)
- IEEE ICC-2010, Cape Town, South Africa, May 23-27 (May 2010)

REVIEW ACTIVITIES

- Reviewer, National initiative called IMPRINT-IIC.2, under SERB, DST, Govt. of India (2020)
- Reviewer, Scheme for Promotion of Academic and Research Collaboration (SPARC), MHRD, Govt. of India (2019)
- Reviewer, Nature Electronics, Springer-Nature
- Reviewer, IEEE Journal on Selected Areas in Communications

- Reviewer, IEEE Communications Surveys and Tutorials
- Reviewer, IEEE Transactions on Wireless Communications
- Reviewer, IEEE Transactions on Signal Processing
- Reviewer, IEEE Transactions on Vehicular Technology
- Reviewer, IEEE Transactions on Mobile Computing
- Reviewer, IEEE Systems Journals
- Reviewer, IEEE Access
- Reviewer, IEEE Wireless Communications Letters
- Reviewer, IEEE Communications Letters

OTHER SERVICES

- Member, Technical Expert Committee, Digital Communication Innovation Square (DCIS) Scheme under Champion Services Sector Scheme (CSSS), under Dept. of Telecomm. (DOT), TCOE India, Govt. of India   (Since 2022)
- Member, Consultative Committee, under Dept. of Telecomm. (DOT), Telecommunication Engineering Center (TEC), Govt. of India for adoption of TSDSI's 5Gi as National Standard   (Since 2021)
- Member, Spectrum group for Wireless Planning and Coordination (WPC) Spectrum Roadmap, TSDSI, GoI   (2021)
- Member, IEEE India Council Executive Committee   (2020)
- IEEE Kharagpur Section (R10) – Chair ('20), Vice Chair ('19), Secretary ('18), Treasurer ('17), Asst. Secretary ('16)
  The Section received 'Best Small Section Award' in R10 during tenure (2016 – 2020)
  The Section received 'Best Section Award in Voting' in India Council in R10 in 2020
- External Examiner, M.Tech Projects Final Evaluation, Dept. of ECE, NIT Silchar   (2021)
- Visvesvaraya Tech. Univ. Nominee to the Board of Studies, RV College of Engineering, Bangalore   (2018 – 2024)
- Member, Technical Audit Team, HAL, Avionics Division, Hyderabad   (2015)
- Member, Mentor Council for NCVT courses, Min. of Labour & Employment, Govt. of India   (2014 – 2015)
- Divisional IP Co-ordinator, Samsung Research, Bangalore, India   (2013)
- Member of Strategic Planning Core Group, SISO, Samsung, Bangalore, India   (2010 – 2011)

UNIVERSITY AND OTHER SERVICE ACTIVITIES

UNIVERSITY ADMINISTRATIVE ACTIVITIES

- Co-ordinating Warden (Allotment), Hall Management Centre, IIT-Kharagpur   (2021-2023)
- Member, Council of Dean, Students Affairs, IIT-Kharagpur   (2020-2022)
- Member, PG Curricula Committee, Benchmarking and Micro-specialization Sub-committee, IIT-Kharagpur   (2021)
- Warden (2019–Till Date), Asst. Warden (2013–2018) of SN/IG Hall of Residence at IIT-Kharagpur   (2013-2020)
- Faculty Co-ordinator for Grenoble – INP Ensimag, France, (Office of AA&IR, IIT-Kharagpur)   (Since 2017)
- Faculty Co-ordinator for Monash University, Melbourne, Australia, (Office of AA&IR, IIT-Kharagpur)   (Since 2019)
- Sectional Co-ordinator, G.S.S. School of Telecommunications, for Office of the Dean (P&C)   (Since 2020)

OTHER ACADEMIC AND ADMINISTRATIVE ACTIVITIES

- Member, PMRF Evaluation Board, IIT Kharagpur   (2022)
- Member, Patent Review Committee, SRIC, IIT Kharagpur   (2023, 2022, 2021)
- Reviewer, Institute Scheme for Innovative Research and Development (ISIRD), IIT Kharagpur   (2020)
- Member, MBA Admission Interview Committee, VGSoM, IIT Kharagpur   (2020)

OTHER SERVICE ACTIVITIES

- Member, Crèche Management Committee, IIT-Kharagpur (Since 2018)
- Acted as Judge for Young Innovators' Program, Office of AA & IR, IIT-Kharagpur (2017, 2018, 2019, 2020)
- Acted as Judge for Technology General Championship, TSG, IIT-Kharagpur (2019)
- Prof.-in-Charge, Research Scholars' Day, GSSST (2015)
- Member, Organizing Committee, International Women's Day celebration for the first time at IIT Kharagpur (2014)
- Member, Organizing Committee, International Women's Day celebration at IIT Kharagpur (2021)

SPONSORED RESEARCH AND INDUSTRIAL CONSULTANCY

RECENT SPONSORED PROJECTS AND CONSULTANCY WORK

- Title : National and Subnational Disaster Risk and Resilience Assessment and Roadmap for Telecom. Sector, India
  Role : Co-PI
  Consultants : Das S., Sen Debarati, Chakrabarti S., Anand A., Sharma S., Ray A., Krishna B. V.
  Sponsor : Coalition for Disaster Resilient Infrastructure (CDRI)
  Period : 01-11-2022 to 31-08-2023
  Value : INR 100.00 Lakhs

- Title : Next Generation Wireless Research and Standardization on 5G and Beyond
  Role : Co-PI
  Investigator : Das S., Sen Debarati, Das G., Dutta A., Singhal C., Adhya A.
  Sponsor : MeitY, Govt. of India
  Period : 30-07-2021 to 29-07-2024
  Value : INR 896.08 Lakhs

- Title : Channel Modelling and Signal Processing for Terahertz Systems for 6G
  Role : PI
  Investigator : Sen Debarati
  Sponsor : Samsung R&D Institute, Bangalore- 560037
  Period : 01-03-2020 to 31-12-2021
  Value : INR 29.5 Lakhs

- Title : Design and Implementation of Blind Equalizer for Telemetry Systems
  Role : PI
  Investigator : Sen Debarati
  Sponsor : CARS Project, DRDL, DRDO, Hyderabad, Govt. of India
  Period : 23-08-2019 to 22-02-2024
  Value : INR 24.75 Lakhs

- Title : 5G Broadcast Research
  Role : Co-PI
  Consultants : Dutta A., Sen Debarati, Biswas P. K.
  Client : Samsung R&D Institute, Noida- 201303, Delhi
  Period : 22-01-2020 to 21-01-2021
  Value : INR 35.67 Lakhs

- Title : Design and Development of Wide-Band Millimeter-wave Phased Array Antenna with Beam Forming Module
  Role : PI
  Investigator : Sen Debarati

Sponsor : IMPRINT-2 programme, SERB, Govt. of India

Period : 27-05-2019 to 26-03-2023

Value : INR 116.36 Lakhs

- Title : DRoNA: Development and Implementation of a Distributed Radio Network Architecture for IoT Communication

  Role : PI

  Investigators : Sen Debarati, Chakraborty S.

  Sponsor : ICPS programme, DST, Govt. of India

  Period : 01-10-2019 to 30-09-2023

  Value : INR 40.57 Lakhs

- Title : Blind Joint Equalization & Detection in presence of Non-linearity & Synchronization Errors for mmWave Comm

  Role : PI

  Investigators : Sen Debarati, Priya P., Chakraborty S.

  Sponsor : Qualcomm India Pvt. Ltd., Bengaluru–560066, India

  Period : 01-12-2017 to 30-11-2025

  Value : INR 10.00 Lakhs

- Title : Radar Target Modeling and Parameter Estimation

  Role : PI

  Investigators : Sen Debarati, De A., Ray P.

  Sponsor : AIRBUS Defence & Space, Airbus Group Innovations, Head of International Operations, France

  Period : 03-06-2015 to 31-12-2025

  Value : INR 17.47 Lakhs

- Title : Opened and intelligent plug-in hybrid electric vehicle (PHVE) technologies for smart Indian cities

  Role : Co-PI

  Investigators : Mukhopadhyay S., Deb A. K., Patra A., Routray A., Maitra B., Chakrabarti P. P., Sen Debarati et. al.

  Sponsor : Ministry of HI & PE, GOI, New Delhi, India; Tata Motors Ltd., Engg. Research Centre, Pune-411018

  Period : 13-10-2016 to 31-08-2023

  Value : INR 1989.00 Lakhs

- Title : Development of National Disaster Spectrum & Comm. Backbone Architecture with Prototype Development

  Role : PI

  Investigators : Sen Debarati, Arif W., Baishya S.

  Sponsor : Ministry of Comm. & Info. Tech., Govt. of India, New Delhi-110 003, India

  Period : 30-09-2015 to 30-11-2020

  Value : INR 45.65 Lakhs

- Title : Sub-sampled radio design for energy efficient 60GHz communications

  Role : PI

  Investigator : Sen Debarati

  Sponsor : ISIRD, SRIC, IIT-Kharagpur

  Period : 19-09-2014 to 31-12-2017

  Value : INR 24.97 Lakhs

- Title : Development of a Laboratory on Novel Electronics Control and Software for Transport by EV

  Role : Co-PI

  Investigators : Mukhopadhyay S., Sengupta S., Dey S., Sen Debarati, Chakraborty S., Mukherjee A. et. al.

  Sponsor : One Time Grant, SRIC, IIT-Kharagpur

  Period : 08-06-2018 to 07-06-2019

Value : INR 1000.00 Lakhs

- Title : Facility for Design, Development and Testing of Next Generation Telecom Gears
  Role : Co-PI
  Investigators : Das S. S., <u>Sen Debarati</u>, Das G., Ray P., Chakrabarti S.
  Sponsor : SGDRI, SRIC, IIT-Kharagpur
  Period : 20-11-2014 to 19-11-2017
  Value : INR 250.00 Lakhs

- Title : Development of CDMA Algorithm for Target Update Link
  Role : Co-PI
  Investigators : Chakrabarti S., <u>Sen Debarati</u>, Das S. S.
  Sponsor : BHARAT Electronics Ltd., Central Research Laboratory, Bangalore - 560 013 (A Govt. of India Enterprise)
  Period : 15-09-2014 to 07-05-2015
  Value : INR 7.17 Lakhs

- Title : Performance Improvement of SDR in Frequency Hopping Dynamic TDMA
  Role : Co-PI
  Consultants : Chakrabarti S., Das S. S., <u>Sen Debarati</u>
  Client : Hindustan Aeronautics Ltd., SLRDC Division, Hyderabad (Govt, of India Enterprise, Ministry of Defence)
  Period : 30-06-2017 to 30-09-2017
  Value : INR 10.33 Lakhs

- Title : Setting up of Centre for Safety Critical Software at IRISET
  Role : Co-PI
  Consultants : Mukhopadhyay S., Dasgupta P., Mal R., Chakrabarti P. P., <u>Sen Debarati</u> (External Member) et. al.
  Client : Ministry of Railways, Indian Railways Inst. of Signal Engg. & Telecomm. (IRISET), Secunderabad
  Period : 06-04-2015 to 13-06-2016
  Value : INR 36.23 Lakhs

EARLIER INDUSTRIAL PROJECTS AND ACADEMIC RESEARCH GRANTS

- At Samsung Research, Frontier Research Group, Bangalore, India

  (a) Real Application Simulator for Next Generation Smart Home

- At Chalmers University of Technology, Dept. of Signals and Systems, Gothenburg, Sweden

  (a) Research in Coherent Optical Communication for the FORCE (Fiber Optic Comm. Research Centre) project

- At Samsung India Software Operations, Network & OS Part, Bangalore , India

  (a) Low power, high data rate sub-band technology for UWB Communication
  (b) PHY Layer Specification for IEEE 802.15 TG6 Body Area Network

- At Central Glass and Ceramic Research Institute (CGCRI), OCF Lab., Kolkata, India

  (a) Gain & Noise Measuring Techniques of EDFA related to WDM applications & measuring some critical parameters

PUBLICATIONS

SUMMARY

- Patents   :   20   (Published / Filed)
- Book Chapters   :   03   (Published)
- Technical Document   :   02   (Published)

- Journal Papers   :   56   (Published in International Referred Journals)
- Conference Papers   :   67   (Published in Proceedings of International Conferences)
- Article in Periodical   :   01   (Published in IEEE Newsletter)

PATENTS

- Method and System for Deployment and Synchronization of Flying Base stations for Establishing Communication Network over a Desired Region, (US Patent Application # **18/152,514**, January 10, 2023), *by* Panda K. G., Wilson A., Sen Debarati (2023)

- Method and System for Deployment and Synchronization of Swarm of Flying Base Stations based Mobile Network for 5G and Beyond, (Indian Patent Application # **202231037130**, November 11, 2022), *by* Panda K. G., Wilson A., Sen Debarati (2022)

- Signal Receiver and Signal Receiving Method for OTFS based mmWave Communication Systems having Non-Ideal Power Amplifier Attributing Nonlinear Distortions in the Signal, (US Patent Application # **18/152,080**, January 09, 2023), *by* Priya P., Reddy S. Ch., Sen Debarati (2023)

- Signal Receiver and Signal Receiving Method for OTFS based mmWave Communication Systems having Non-Ideal Power Amplifier Attributing Nonlinear Distortions in the Signal, (Indian Patent Application # **202231030604**, May 27, 2022), *by* Priya P., Reddy S. Ch., Sen Debarati (2022)

- Method and System for Pilot Design and Channel Estimation in Presence of Nonlinearity in the Delay-Doppler Domain for mmWave OTFS Systems, (US Patent Application # **18/152,622**, January 10, 2023), *by* Priya P., Reddy S. Ch., Sen Debarati (2023)

- Method and System for Pilot Design and Channel Estimation in Presence of Nonlinearity in the Delay-Doppler Domain for mmWave OTFS Systems, (Indian Patent Application # **202231028390**, May 17, 2022), *by* Priya P., Reddy S. Ch., Sen Debarati (2022)

- System and Method for Spectrally Efficient Pilot and Detector Design in Delay-Doppler Domain for OTFS based NR (New Radio) IoT and Massive Machine to Machine (M2M) Communications, (US Patent Application # **18/152,607**, January 10, 2023), *by* Reddy S. Ch., Priya P., Sen Debarati, Singhal C. (2023)

- System and Method for Spectrally Efficient Pilot and Detector Design in Delay-Doppler Domain for OTFS based NR (New Radio) IoT and Massive Machine to Machine (M2M) Communications, (Indian Patent Application # **202231027219**, May 11, 2022), *by* Reddy S. Ch., Priya P., Sen Debarati, Singhal C. (2021)

- Millimeter Wave Antenna Array Design Comprising Wideband Proximity Coupled Patch Antenna Module for 60 GHz Communications, (IPR & IR Cell, IIT-Kharagpur ID # **21637**, Nov 11, 2021), *by* Ghosh S., Sen Debarati (2021)

- Wideband Electromagnetically Coupled Microstrip Patch Antenna for 60 GHz Millimeter Wave Phased Array, (US Patent Publication # **17/780,554**, December 22, 2022), *by* Ghosh S., Sen Debarati (2022)

- Wideband Electromagnetically Coupled Microstrip Patch Antenna for 60 GHz Millimeter Wave Phased Array, (Indian Patent Publication # **29/2021**, July 16, 2021), *by* Ghosh S., Sen Debarati (2021)

- Wideband Microstrip Antenna Array Based Antenna System for GHz Communications, (US Patent Application # **18/152,674**, January 10, 2023), *by* Ghosh S., Sen Debarati (2023)

- Wideband Microstrip Antenna Array Based Antenna System for GHz Communications, (Indian Patent Application # **202231026020**, May 04, 2022), *by* Ghosh S., Sen Debarati (2022)

- Method and System for Handling Interference Between a Low Power Network and a High Power Network Sharing a Common Frequency Band, (US Patent Publication # **20140328194 A1**, November 06, 2014), *by* Sen Debarati, Patro R. K., Thejaswi P. C. (2014)

- Method and System for Handling Interference Between a Low Power Network and a High Power Network, (Indian Patent Publication # **18/2016**, June 03, 2016), *by* <u>Sen Debarati</u>, Patro R. K., Thejaswi P. C. (2016)

- Method and System for Identifying an Emergency Signal of an Electronic Device by a Co-ordinator Device, (Indian Patent Grant # **364823**, April 16, 2021), *by* Bynam K., <u>Sen Debarati</u>, Goyal G., Won E. (2021)

- System and Method for Sub-sampled OFDM based Sub-band Wideband for Energy Efficient UWB and 60GHz Comm., (Indian Patent Grant # **363005**, March 24, 2021), *by* Nair J. P*.*, <u>Sen Debarati</u>, Jos S., Naniyat A. (2021)

- Method and System of Frequency Synchronization for Sub-Band Multicarrier based Wideband Systems, (Indian Patent Grant # **356491**, January 22, 2021), *by* <u>Sen Debarati</u>, Nair J. P., Jos S., Naniyat A. (2021)

- Method and System for joint Training Sequences design for correlated Channel and Frequency Offset Estimation, (US Patent Grant # **10560302 B2**, February 11, 2020), *by* Chakraborty S., <u>Sen Debarati</u> (2020)

- Methods and Devices for Handling Inter-Symbol Interference in a Sub-band Ultra-Wideband Communication Environment, (Indian Patent Grant # **346490**, September 09, 2020), *by* Bynam K., Nair J. P., <u>Sen Debarati</u>, Naniyat A. (2020)

- Method and Apparatus Of Timing Synchronization For High Delay Spread Wideband And Ultra Wideband Channels, (Indian Patent Grant # **336818**, May 14, 2020), *by* Nair J. P., Bynam K., <u>Sen Debarati</u>, Naniyat A. (2020)

- Scalable Sub-Band Ultra-wideband Communication System, (Indian Patent Grant # **312314**, May 06, 2019), *by* <u>Sen Debarati</u>, Nair J. P., Naniyat A. (2019)

- Method and Apparatus for Generating Multiple Sets of Codes for Spread Spectrum based Communication Systems, (Indian Patent Grant # **308606**, March 06, 2019), *by* Jos S., Nair J. P., <u>Sen Debarati</u>, Naniyat A. (2019)

- Method and Apparatus for Timing Synchronization at Sub-sampled rate for Sub-sampled Wideband Systems, (US Patent Grant # **9054905 B2**, June 09, 2015), *by* <u>Sen Debarati</u>, Bynam K., Nair J. P., Naniyat A. (2015)

- Timing Synchronization Method and Apparatus in a Wireless Communication System, (US Patent Grant # **8433012 B2**, April 30, 2013), *by* <u>Sen Debarati</u>, Nair J. P., Jos S., Naniyat A. (2013)

BOOK CHAPTERS

- Abraham A. et. al. (Eds.), Intelligent Systems Design and Applications, Advances in Intelligent Systems and Computing, vol. 736, **Springer International Publishing**, Book Chapter 91 *by* Ghosh S., <u>Sen Debarati,</u> Design of Millimeter-wave Microstrip Antenna Array for 5G Communications - A Comparative Study, 952-960 (2018)

- Gervasi O. et al. (Eds.), Computational Science and Its Applications, Lecture Notes in Computer Science, vol 10962, **Springer International Publishing**, Book Chapter 35 *by* Ghosh S., <u>Sen Debarati,</u> Performance Analysis of Different Multiband RF Energy Harvesting Systems for Wireless Sensor Networks, 521-530 (2018)

- Tiwari A. et. al. (Eds.), Advances in Intelligent Systems and Computing, vol. 1393, **Springer Soft Computing for Problem Solving**, Book Chapter, *by* Debnath S., Arif W., Baishya S., <u>Sen Debarati,</u> Improved Self-adaptive Differential Evolution Based Throughput Maximization of Energy Harvesting Cognitive Radio Network, 767-778 (2021)

TECHNICAL DOCUMENTS

- Fronthaul Design in Cloud Radio Access Network : A Survey *by* Vinnakota V. B., Panda K. G., <u>Sen Debarati,</u> Chakraborty S. *in* **Advanced Computing and Communications**, Publication of the ACCS Society**,** 3(4) pp 1-19 Dec. 2020, Bangalore, India (2020)

- Long-Term Clock Synchronization in Wireless Sensor Networks with Arbitrary Delay Distributions, *by* Sun W., Strom Erik G., Brannstrom F., <u>Sen Debarati</u> *in* European Cooperation in the field of Scientific and Technical Research : Technical Document No. **IC1004 TD(12) 05038**, Sept. 2012, Bristol, UK (2012)

JOURNAL PAPERS (IN REVERSE CHRONOLOGICAL ORDER)

- Iterative Variational Bayesian Inference Based Channel Estimation for TWR mmWave Systems *by* Bera S., Chakraborty S., <u>Sen Debarati</u>, Dutta A. **IEEE Transactions on Vehicular Technology** (*Accepted*) (2022)

- Channel Estimation in Sub-6 GHz and Hybrid Millimeter Wave MIMO Systems with Low-Resolution ADCs *by* Boddupelly S., Priya P., <u>Sen Debarati</u>, Chakrabarti S. **IEEE Transactions on Green Communications and Networking** (*Accepted*) (2022)

- Optimal 3D Deployment and Trajectory Selection of UAVs for Maximum Network Utility and Disaster Management *by* Debnath S., Arif W., <u>Sen Debarati</u>, Baishya S. **Springer Soft Computing** (*Accepted*) (2022)

- Spectral Efficient Modem Design with OTFS Modulation for Vehicular-IoT System *by* Reddy S. Ch., Priya P., <u>Sen Debarati</u>, Singhal C. **IEEE Internet of Things Journal** 10(3) 2444-2458 (2022)

- Design of Broadband Electromagnetically Coupled Planar Antenna and Array for 60 GHz Millimeter Wave Applications *by* Ghosh S., <u>Sen Debarati</u> **Wiley Int. Journal of RF and Microwave Computer-Aided Engg.** 32(12) e23515 (2022)

- Performance Analysis of Cell-Based Spectrum Handoff in Cognitive Radio Vehicular Centralized and Ad-Hoc Networks *by* Hoque S., Arif W., <u>Sen Debarati</u> **Elsevier Vehicular Communications** 37: 100503 (2022)

- Energy Efficient Initial Deployment and ML Based Post-Deployment Strategy for UAV Network with Guaranteed QoS *by* Panda K.G., Wilson A., <u>Sen Debarati</u> **IEEE Transactions on Aerospace and Electronic Systems** 58(6) 5220-5239 (2022)

- Design and Performance Analysis of Intra-Vehicle VLC System with Random Receiver Orientation *by* Kumar M. L. N., <u>Sen Debarati</u>, Mohapatra P. **IEEE Transactions on Intelligent Transportation Systems** 23(9) 16170-16184 (2022)

- A Survey of Longitudinal Changes in Cellular Network Architecture: The Good, the Bad, and the Ugly *by* Dwivedi B., Sen Debarati, Chakraborty S. **Elsevier Journal of Network and Computer Applications** 207: 103496 (2022)

- Data Detection with CFO Uncertainty and Nonlinearity for mmWave MIMO-OFDM Systems *by* Priya P., <u>Sen Debarati</u> **IEEE Systems Journal** 16(3) 3734-3745 (2022)

- A Comprehensive Survey of Emergency Communication Network and Management *by* Debnath S., Arif W., Roy S., Baishya S., <u>Sen Debarati</u> **Springer Wireless Personal Communications** 124(2) 1375-1421 (2022)

- Computationally Efficient Hybrid Differential Evolution with Learning for Engineering Application *by* Debnath S., Arif W., <u>Sen Debarati</u>, Baishya S. **Inderscience Int. Journal of Bio-Inspired Computation** 19(1) 29-39 (2022)

- Energy Efficient Optimal Resource Allocation in Multi-RAT Heterogeneous Network *by* Debnath S., Jee A., <u>Sen Debarati</u>, Baishya S., Arif W. **Taylor & Francis Applied Artificial Intelligence** 35(15) 2246-2275 (2021)

- A State Based Resource Allocation Game for Distributed Optimization in 5G Small-Cell Networks *by* Mawatwal K., <u>Sen Debarati</u>, Roy R. **IEEE Transactions on Vehicular Technology** 70(11) 12072-12087 (2021)

- Maximizing Last-minute Backup in Endangered Time-Varying Inter-Datacenter Networks *by* Das S., Panda K.G., <u>Sen Debarati</u>, Arif W. **IEEE/ACM Transactions on Networking** 29(6) 2646-2663 (2021)

- Particle Filter Based Nonlinear Data Detection in Presence of CFO for Frequency Selective mmWave MIMO-OFDM Systems *by* Priya P., <u>Sen Debarati</u> **IEEE Transactions on Vehicular Technology** 70(6) 5892-5907 (2021)

- Performance Analysis of a Semi-Blind Channel Estimator in One-Bit Massive MIMO Systems *by* Boddupelly S., Mawatwal K., <u>Sen Debarati</u>, Chakrabarti S. **IEEE Systems Journal** 15(1) 1224-1234 (2021)

- A Hybrid Memory-based Dragonfly Algorithm with Differential Evolution for Engineering Application *by* Debnath S., Baishya S., <u>Sen Debarati</u>, Arif W., **Springer Engineering with Computers** 37(4) 2775–2802 (2021)

- On Distance Statistics of First Arriving Multi-paths in Indoor mm-Wave Communications *by* Rakesh R. T., <u>Sen Debarati</u>, Das G., Viterbo E., Hong Y. **IEEE Transactions on Vehicular Technology** 69(12) 16218-16223 (2020)

- Assessment of Spectrum Handoff Performance in Cognitive Radio Cellular Networks *by* Hoque S., Arif W., <u>Sen Debarati</u> **IEEE Wireless Communications Letters** 9(9) 1403-1407 (2020)

- Performance Analysis of C-RAN with Different Deployment Distributions *by* Vinnakota V. B., <u>Sen Debarati</u> **Springer Nature Computer Science** 1(4) 195 (2020)

- Performance Analysis of a SAGE based Semi-blind Channel Estimator for Pilot Contaminated MU Massive MIMO Systems *by* Mawatwal K., <u>Sen Debarati</u>, Roy R. **IEEE Access** 8(1) 46682-46700 (2020)

- Optimization of Secondary User Capacity in a Centralized Cooperative Cognitive Radio Network with Primary User under Priority *by* Debnath S., Rai C.S., <u>Sen Debarati</u>, Baishya S., Arif W. **Wiley Engineering Reports** 2(7) 1-18 (2020)

- Impact of Intra-cluster Angular Spread on the Performance of NLoS Millimeter Wave Links with Imperfect Beam Alignment *by* Kutty S., <u>Sen Debarati</u> **IEEE Transactions on Vehicular Technology** 69(2) 1813-1827 (2020)

- A Survey of National Disaster Communication Systems and Spectrum Allocation - an Indian Perspective *by* Das S., Panda K., <u>Sen Debarati</u>, Arif W. **IETE Technical Review** 37(2) 111-136 (2020)

- Semi-Blind Data Detection and Non-linear Equalization in Full-duplex TWR-OFDM Systems with High Mobility *by* Chakraborty S., <u>Sen Debarati</u> **IEEE Transactions on Wireless Communications** 18(12) 6000-6014 (2019)

- Design and Deployment of UAV-Aided Post-Disaster Emergency Network *by* Panda K. G., Das S., <u>Sen Debarati</u>, Arif W. **IEEE Access** 7 102985-102999 (2019)

- An Iterative Semi-Blind Channel Estimation scheme and Uplink Spectral Efficiency of Pilot Contaminated One-bit Massive MIMO Systems *by* Boddupelly S., Mawatwal K., <u>Sen Debarati</u>, Chakrabarti S. **IEEE Transactions on Vehicular Technology** 68(8) 7854-7868 (2019)

- Risk-Aware Last-Minute Data Backup in Inter-Datacenter Networks *by* Das S., Panda K. G., <u>Sen Debarati</u>, Arif W. **IET Networks** 8(5) 307-320 (2019)

- An Inclusive Survey on Array Antenna Design for Millimeter-Wave Communications *by* Ghosh S., <u>Sen Debarati</u> **IEEE Access** 7 83137-83161 (2019)

- Analysis of Handoff Delay for Proactive Spectrum Handoff Scheme with PRP M/G/1/K Queuing System in Cognitive Radio Networks *by* Hoque S., Shekhar S., <u>Sen Debarati</u>, Arif W. **IET Communications** 13(6) 706-711 (2019)

- Iterative SAGE based Joint MCFOs and Channel Estimation for Full Duplex Two-Way Multi-relay Systems in Highly Mobile Environment *by* Chakraborty S., <u>Sen Debarati</u> **IEEE Transactions on Wireless Communications** 17(11) 7379-7394 (2018)

- Energy Efficient Scheduling for Concurrent Transmission in Millimeter Wave WPANs *by* Rakesh R. T., Das G., <u>Sen Debarati</u> **IEEE Transactions on Mobile Computing** 17(12) 2789-2803 (2018)

- On Bounds of Spectral Efficiency of Optimally Beamformed NLOS Millimeter Wave Links *by* Rakesh R. T., <u>Sen Debarati</u>, Das G. **IEEE Transactions on Vehicular Technology** 67(4) 3646-3651 (2018)

- Impact of Residual Time Distributions of Spectrum Holes on Spectrum Handoff performance with Finite Switching Delay in Cognitive Radio Networks *by* Hoque S., <u>Sen Debarati</u>, Arif W. **Elsevier AEÜ - International Journal of Electronics and Communications** 92 21-29 (2018)

- Analysis of Spectrum Handoff under General Residual Time Distributions of Spectrum Holes in Cognitive Radio Networks *by* Hoque S., Arif W., Sen Debarati, Baishya S. **Journal of Information Science and Engineering (JISE)** 34(4) 851-867 (2018)

- A Robust and Efficient Beam Training Scheme for Millimeter Wave Indoor Communications *by* Kutty S., Sen Debarati **IET Communications** 12(2) 157-168 (2018)

- A Semi-Blind Channel Estimation Algorithm for Massive MIMO Systems *by* Mawatwal K., Sen Debarati, Roy R. **IEEE Wireless Communications Letters** 6(1) 70-73 (2017)

- Joint Estimation of MCFOs and Channel Gains for Two-way Multi-relay Systems with High Mobility *by* Chakraborty S., Sen Debarati **IEEE Wireless Communications Letters** 6(5) 610-613 (2017)

- Joint Frequency Offset and Channel Estimation in Distributed MIMO-OFDM Systems *by* Chakraborty S., Sen Debarati **Springer Wireless Personal Communications** 92(4) 1829-1847 (2017)

- Scalable Subband Subsampled Radio Architecture for Millimeter Wave Communications with Performance Analysis *by* Rakesh R. T., Kutty S., Sen Debarati, Das G. **IET Communications** 10(16) 2071-2083 (2016)

- Beamforming for Millimeter Wave Communications: An Inclusive Survey *by* Kutty S., Sen Debarati **IEEE Communications Surveys and Tutorials** 18(2) 949-973 (2016)

- ECM and SAGE based Joint Estimation of Timing and Frequency offset for DMIMO-OFDM System *by* Chakraborty S., Sen Debarati **Elsevier Physical Communication** 19 47-60 (2016)

- Joint Estimation of Time, Frequency Offsets and Channel Gains with ICIs in EF multi-relay DMIMO-OFDM system *by* Chakraborty S., Sen Debarati **IEEE Transactions on Vehicular Technology** 66(7) 5822-5838 (2016)

- MCRB for Timing, Phase and Frequency Estimation in Presence of Self-Phase Modulation for Low Rate Optical Communication *by* Sen Debarati **Springer Photonic Network Communications** 32(3) 393-406 (2016)

- A Comprehensive Analysis of Spectrum Handoff Under Different Distribution Models for Cognitive Radio Networks *by* Arif W., Hoque S., Sen Debarati, Baishya S. **Springer Wireless Personal Communications** 85(4) 2519-2548 (2015)

- Energy Efficient Scalable Sub-band based Ultra-Wideband System *by* Nair J. P., Sen Debarati, Jos S. **Springer Wireless Personal Communication** 73(3) 1143-1167 (2013)

- MCRB for Timing and Phase Offset for Low-Rate Optical Communication with Self-Phase Modulation *by* Sen Debarati, Wymeersch H., Irukulapati N. V., Agrell E., Johannisson P., Karlsson M., Andrekson P. A. **IEEE Communications Letters** 17(5) 1004-1007 (2013)

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ARTICLE IN PERIODICAL

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THESIS WORK

- Ph.D Thesis : Efficient Timing and Frequency Synchronization for Multi-Band OFDM Based Ultra-Wideband Systems

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    Thesis Examiner : Prof. Robert Schober, UBC, Canada;   Prof. H. S. Jamadagni, IISc, India

- M.E. Thesis : Studies on EFDA Related to WDM Applications and Measurement of Some Essential Parameters

    Advisor : Prof. D. Mukherjee, IIEST, Howrah;   Co-advisor : Mr. K. Dasgupta, CGCRI, Kolkata

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  - Associated with one Public Philanthropic Trust 'Sarada Kalyan Bhandar', Midnapore as Volunteer to serve the under privileged Children, Youth, and Women of neighbouring area through Education, Nutrition, Healthcare and Environmental Awareness *with a motivation of Women Emancipation*

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