NAME : Dr. AMIT KUMAR DUTTA
Designation : Assistant Professor
Address : GS Sanyal School of Telecommunication
Indian Institute of Technology (IIT), Kharagpur,
West Bengal, INDIA.
Phone : +91-9448479103(M),
email : amitdutta@gssst.iitkgp.ac.in, amitkdutta6@gmail.com
DOB : 10/03/1979

EDUCATION:

DEGREE	***INSTITUTE***	***YEAR***
PhD	INDIAN INSTITUTE OF SCIENCE, Bangalore, India	2015
B.E (E.T.C)	BENGAL ENGINEERING COLLEGE, SHIVPUR, WEST BENGAL (Now IIEST)	2000
10+2 (Science)	RAM KRISHNA UCHCHYA VIDYA LAYA, WEST BENGAL (West Bengal State Board)	1996
10	B.B.L.B VIDYA MANDIR (West Bengal State Board)	1994

EXPERIENCE :

Company/Institute Name	**Year of Service**	**Responsibility**
IIT Kharagpur	Since 2018 July 9	**Assistant Professor**
NxP Semiconductor Pvt. Ltd.	Feb, 2017 – July,2018	**R & D engineer:** PHY layer development of UWB modem. I was involved in the development of IEEE 802.15.4a based UWB Modem and SoC development. My specific role was the UWB Tx-Rx development using MATLAB/SIMULINK and integrate the RTL into the SoC.
Broadcom Communication Ltd. + Cypress Semiconductor (As part of sell-off or IoT business)	2014 to 2017, Jan.	**Principal Scientist,** LTE Architect, WLAN Physical layer. In this role, I was involved in the Modem development of the 3GPP 4G LTE M2M standard. My specific role was the algorithm and RTL development of Tx-Rx blocks. I was also involved in the WiFi Modem characterization and its smooth integration into the SoC.

Texas Instrument Pvt. Ltd. **(9 Yrs.)**	2000 December to 2009 April	**Design Lead** 1. Design of various System-on-Chip modules related to communication and Audio/Video Signal processing. 2. Test related circuit design for DFT. 3. Managed a team of 4-5 people. 5. Also involved in silicon debug.
Wipro Technology Ltd. (6 months)	2000, June to 2000 December	Design Engineer RTL Design and verification of modem's baseband data encoder circuit.

RESEARCH INTERESTS: The following topics are extensively covered as my research domains:

1. Quantum communication and Quantum Signal processing
2. Communication theory (Physical layer)
3. Large MIMO, OFDM system
4. Relay, Cognitive Radio, RadRCom,
5. THz communication
6. Next generation wireless system like 6G, Ultra Wide Band (UWB) etc.
7. VLSI architecture developments for DSP and Communication system

PhD students guided : 2

1. **Dr. Afaque Azam (2022)**
2. **Dr. Anupam Shome (2023)**

Master students guided : 6

PUBLICATION: (Journal and Magazine) (19)

1. A Complexity-Efficient Quantum Architecture and Simulation for Eigen-Spectrum Estimation of Vandermonde System in a Large Antenna Array, by Mostafizur Rahaman Laskar, Amit Kumar Dutta. **IEEE Transaction on Circuit and System 1: Regular Papers (Accepted, 2023)**
2. Iterative Variational Bayesian Inference Based Channel Estimation for TWR mmWave Systems by Bera S., Chakraborty S. , Sen D. , Dutta A. K. **IEEE Transactions on Vehicular Technology (Accepted) - (2022)**
3. Performance Analysis and Precoder Design for IRS-Assisted MIMO System with Non-Linear Power Amplifiers by Afaque A., Dutta A. K., Mukherjee A. **Elsevier Physical Communication - (2022)**
4. A Reduced-Complexity Maximum-Likelihood Detection with a sub-optimal BER Requirement by Bathala S. M., Dutta A. K. **Indian Journal of Data Communication and Networking - (2022)**
5. Downlink Precoding for Hybrid Fully Connected Linear Subarrays in mmWave with Rainfall Scattering and Hardware Impairments *by* Afaque A., Dutta A. K., Mukherjee A. **IEEE Transaction on Vehicular Technology (Accepted)** - (2022)

6. Eigen Spectrum Estimation and Source Detection in a Massive Sensor Array based on Quantum Assisted Hamiltonian Simulation Framework *by* Laskar M. R., Mondal S. , Dutta A. K. **IEEE Transaction on Communication (accepted/in-press)** 1-11 (2022)
7. Shome A., Dutta A. K., Chakrabarti S," BER Performance Analysis of Energy Harvesting Underlay Cooperative Cognitive Radio Network with Randomly Located Primary Users and Secondary Relays",**IEEE Transaction on Vehicular Technology,** vol.70, no. 5, pp-4740-4752, May, 2021.
8. Mondal S., Laskar M. R., Dutta A. K.," ML Criterion based Signal Detection of a MIMO-OFDM System using Quantum and Semi-Quantum Assisted Modified DHA/BBHT Search Algorithm" **IEEE Transaction on Vehicular Technology,** vol. 70, no. 2, pp-1688-1698, Feb. 2021.
9. Azam A.Md, Dutta A. K, Mukherjee A, "Performance Analysis of Dipole Antenna based Planar Arrays with Mutual Coupling and Antenna Position Error in mmWave Hybrid System", **IEEE Transaction on Vehicular Technology, (accepted for publication)** 2021. DOI: 10.1109/TVT.2021.3104224
10. Shome A., Dutta A. K., Chakrabarti S, "Throughput Assessment of Non-linear Energy Harvesting Secondary IoT Network with Randomly Located Licensed Users and Nakagami-m Fading", **IEEE Transaction on Vehicular Technology,** vol. 70, no. 2, pp. 7283-7288, July 2021.
11. Amit Dutta**,** "Performance Analysis and Design of MIMO Power NOMA with Estimated Parameters Error Statistics along with SIC and Hardware Imperfections", **IEEE Transaction on Vehicular Technology**, vol. 70, no. 2, pp. 1488-1500, July 2020.
12. Azam M. A., Dutta A. K., Mukherjee A., " Uplink Channel Estimation with Hardware Imperfections, Antenna Position Error and Channel Correlation for Nested and Linear Array Antennas**",IEEE Transaction on Vehicular Technology**, vol. 69, no. 12, pp. 15412-15426, Dec. 2020.
13. Amit Dutta, "MBER Criterion Assisted Power NOMA Design and Performance Analysis with Estimated Channel", **IEEE Transaction on Vehicular Technology**, vol. 68 no. 12 pp. 11816-11826, Dec. 2019.
14. Amit Dutta, "Performance Analysis of Hardware Impairment Aware MMSE Receiver with Channel and CFO Estimation Error Statistics for A Large MIMO-OFDM system " **IEEE Transaction on Vehicular Technology**, vol. 68, no. 12, pp. 11827-11837, Dec. 2019.
15. Amit Dutta, K.V.S. Hari, Lajos Hanzo, Neelesh Mehta and Chandra Murthy, " Minimum Error Probability MIMO-Aided Relaying: Multihop, Parallel and Cognitive Designs " **IEEE Transaction on Vehicular Technology**, vol. 66, no. 6, pp. 5435-5440, Oct. 2016.
16. Amit Dutta, K.V.S. Hari,and Lajos Hanzo, "Minimum-Error-Probability CFO Estimation for Multiuser MIMO-OFDM Systems," **IEEE Trans. Vehicular Tech.,** vol. 64, no. 7, pp. 2804-2818, July. 2015.
17. Amit Dutta, K.V.S. Hari,and Lajos Hanzo, "Linear Transceiver Design for an Amplify-and-Forward Relay Based on the MBER Criterion," **IEEE Trans. Communication**, vol. 62, no. 11, pp. 3765-3777, Nov. 2014.
18. Amit Dutta**,** K.V.S. Hari, Lajos Hanzo "Channel Estimation Relying on the Minimum Bit Error Ratio Criterion for BPSK and QPSK Signals," **IET Communications**,vol.8, pp. 69-76, Jan 2014.

19. Rong Zang, K.V.S. Hari, Lajos Hanzo, Amit Dutta, *et.al "*Advances in base-and mobile-station aided cooperative wireless communication: An overview*"*, **IEEE Vehicular Technology Magazine**, vol.8, pp-57-69, March 2013.

PUBLICATION: (Conference)(6)

1. Azam M. A., Mukherjee A. , Dutta A. K.," Effect of Gaussian Correlated Channel on Uplink Channel Estimation for Massive MIMO with Nested Array at the Base Station", Accepted at **IEEE** National Conference on Communication (NCC), 2020,IIT Kharagpur.
2. **Amit Datta** "Power Domain NOMA Design based on MBER Criterion " Accepted at **IEEE** National Conference on Communication (NCC), 2019, Bangalore.
3. **Amit Datta** and K. V. S. Hari, "Channel Estimation Using Minimum Bit Error Rate Framework for BPSK Signals " Proceedings of IEEE Vehicular Technology Conference (VTC-Spring), May 15-18 2011, Budapest, Hungary.
4. **A. Dutta**, S.Alampally, **A** Kumar, R.A.Parekhji, **"A** BIST Implementation Framework for Supporting Field Testability and Configurability in an Automotive **SOC", IEEE conference and w**orkshop on Dependable and Secure Nanocomputing, 2007**.**
5. **A.Dutta**, S.Alampally, **V. Prasanth**, R.A.Parekhji, DFT Implementations for Striking the Right Balance between Test Cost and Test Quality for Automotive SOCs", **IEEE** International conference on test (ITC, Oct. 28-30, 2008), Santa Clara, USA.
6. Sandeep Jain; Jais Abraham; Srinivas Kumar Vooka; Sumant Kale; **Amit Dutta**; Rubin Parekhji, "Enhancements in Deterministic BIST Implementations for Improving Test of Complex SOCs", **IEEE** conference on VLSI Test (VTS), May 6-8, 2007, Barkley, USA.

PATENT (Granted US Patents) (4):

1. Low overhead and timing improved architecture for performing error checking and correction for memories and buses in system-on-chips, and other circuits, systems and processes**. Patent no. 8671329 (Part-1).**
2. Low overhead and timing improved architecture for performing error checking and correction for memories and buses in system-on-chips, and other circuits, systems and processes. **Patent no. 8438344 (Part-II).**
3. On-chip seed generation using boolean functions for LFSR re-seeding based logic BIST techniques for low cost field testability. **Patent no. 8286042.**
4. Optimizing MRC coefficients for RAKE receiver for increasing SNR. (With NxP Semiconductor Ltd., 2021) **Patent no. 11025295**

PATENT (Pending Indian Patents) (3) :

1. [1]. **M. R. Laskar** and A. K. Dutta, A Composite Quantum Architecture For Quantum Realization of Jordan-Form Based Systems, filed for an **Indian Patent, Appl. No.: 202231049314, 2022.**

2. M. R. Laskar and A. K. Dutta, A Quantum Circuit System For Realizing Vandermonde Matrix And A Method Thereof., filed for an **Indian Patent, Appl. No.: 202231072320, 2022.**

3. M. R. Laskar and A. K. Dutta, A Quantum Circuit System For Realizing Hankel Matrix Structure And A Method Thereof., filed for an **Indian Patent, Appl. No.: 202231072327, 2022.**