Shuvam Chakraborty

Graduate Research Assistant
Electrical & Computer Engineering
State University of New York, Albany
1400 Washington Avenue, Albany, NY, USA

schakraborty@albany.edu
(+1)838-(200)-0728
Google scholar
LinkedIn
Website

Research Interest

Machine Learning for Wireless Communication ■ Signal Processing ■ THz and sub-THz Band Communication ■ Spectrum Sharing and Coexistence ■ Distributed Learning for Wireless Systems

Education

PhD - Electrical & Computer Engineering, August 2019 - Present
State University of New York, Albany, NY, USA

Advisor: Dr. Dola Saha
Thesis: Theory Guided Machine Learning for Wireless Physical Layer
GPA: 3.86/4.00

Bachelor of Engineering - Electronics & Telecommunication August 2014 - June 2018
Jadavpur University, Kolkata, India

Advisor: Dr. Ananda S. Chowdhury
Thesis: Active Contours for Artery Image Segmentation
GPA: 9.28/10.00

Professional Experience

SUNY Albany - Graduate Research Assistant
Albany, NY, USA August 2019 - Present

Distributed Learning for Wireless communication:
■ Proposed a fully decentralized channel allocation approach deploying federated learning in a heterogeneous network scenario for unlicensed shared spectra

Theory Guided Deep Learning for Wireless Receiver Design:
■ Developed a neural network model for channel estimation empowered by theory of wireless channel and signal that outperforms most practical methods in terms of accuracy with limited computation cost
■ Developed knowledge aided neural network model for physical layer of wireless receiver for THz band communication

Thz Band Communication:
■ Proposed candidate waveform for THz band communication with analytical derivation of signal parameters, performed over the air experiment for performance analysis

Spectrum Sharing and Coexistence:
■ Proposed collaborative spectrum sharing metric for active and passive usage of radio frequency band

Nokia Standards
Naperville, IL, USA June 2022 - August 2022

AI/ML based CSI-RS Compression and Quantization:
■ Wokred on AI/ML solution for compression and quantization for CSI-RS feedback in Massive MIMO systems. Developed ML based designs with jointly optimized compression and quantization module.
■ Integrated the ML module in system level simulator for user end performance verification. Contributions are integrated in 3GPP contribution doc and additional results published in-

Virginia Tech - Research Intern
Blacksburg, VA, USA June 2017 - August 2017

Energy Efficient Distribution of Low Power Systems:
Worked on a distributed clustering algorithm for adaptive energy optimization in remote IoT network

Publications

Communication Knowledge Aided Neural Network for OFDM Receiver in Terahertz Band | IEEE ICC 2021
*Shuvam Chakraborty**, Dola Saha, Ngwe Thawdar

Spectrum Sharing via Collaborative RFI Cancellation for Radio Astronomy | IEEE DYSPAN (Awarded Best Paper) 2021 Maqsood Careem, *Shuvam Chakraborty**, Aveek Dutta, Dola Saha, Gregory Hellbourg

Collaborative RFI Cancellation for Radio Astronomy |RFI Workshop, ECMWF - abstract 2022 Maqsood Careem, *Shuvam Chakraborty**, Aveek Dutta, Dola Saha, Gregory Hellbourg

A Case for OFDM in Ultra-broadband Terahertz Communication: An Experimental Approach | ACM MOBICOMM (MMNETS Workshop) 2021
*Shuvam Chakraborty**, Claire Parisi, Dola Saha, Ngwe Thawdar

Domain Knowledge aided Neural Network for Wireless Channel Estimation | IEEE GLOBECOMM 2021
*Shuvam Chakraborty**, Dola Saha

Learning from Peers at the Wireless Edge | IEEE COMSNETS 2020
*Shuvam Chakraborty**, Hesham Mohammed, Dola Saha

Teaching Experience

IECE 233 - Hardware Software Interface, Teaching Assitant Fall 2020, Spring 2021
Responsibilities: Graded, Conducted Laboratory Classes

IECE 141 - Introduction to Programming, Teaching Assitant Spring 2021
Responsibilities: Graded Coursework, Developed Assignments, Conducted Laboratory Classes.

IECE 111 - Introduction to ECE, Teaching Assitant Fall 2020
Responsibilities: Graded Coursework, Conducted Laboratory Classes

Coursework

■ Probability and Random Processes ■ Information Theory ■ Cyber-Physical Systems ■ Advanced Digital Communication ■ Modern Wireless Networks ■ Statistical Pattern Recognition ■ Machine Learning ■ Convex Optimization

Honors and Awards

Best Paper Award, IEEE DySPAN, 2021

Presidential Fellowship Award, University at Albany, 2019

SIGCOMM International Travel Grant, 2020

'INSPIRE' Scholarship, MHRD Department, Govt. of India, 2014

Skills Summary

Communication Protocol: LTE/LTE-A, WiFi - IEEE 802.11.

Programming Languages: C, C++, MATLAB, Python

Algorithms: Transmitter/Receiver structures for OFDM/Single Carrier Wireless systems, Linear/Non-Linear programming, Convex Optimization

Scripting Languages: HTML, LaTeX

Platforms: Tensorflow, Pytorch

References

Dola Saha, Assistant Professor, State University of New York, Albany

Aveek Dutta, Assistant Professor, State University of New York, Albany

Amitabha Ghosh, Head, Radio Interface Group at Nokia Bell Labs