Shuvam Chakraborty

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Research Interest

Machine Learning for Wireless Communication ■ Signal Processing ■ 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 Deep Learning for Wireless Physical Layer
GPA: 3.84/4.00

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

Research Experience

SUNY Albany - Graduate Research Assistant Albany, USA
Advisor: Dr. Dola Saha 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

Virginia Tech - Research Intern Blacksburg, USA
Advisor: Dr. Harpreet S. Dhillon 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 (under review)
*Shuvam Chakraborty**, Dola Saha, Ngwe Thawdar

Spectrum Sharing via Collaborative RFI Cancellation for Radio Astronomy | IEEE DYSPAN 2021 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

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

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

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