

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

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**, Aweek 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 GLOBECOM 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 Assistant

Fall 2020, Spring 2021

Responsibilities: Graded, Conducted Laboratory Classes

IECE 141 - Introduction to Programming, Teaching Assistant

Spring 2021

Responsibilities: Graded Coursework, Developed Assignments, Conducted Laboratory Classes.

IECE 111 - Introduction to ECE, Teaching Assistant

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. Aweek Dutta, Assistant Professor, State University of New York, Albany