Soumyadeep Datta

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EDUCATION

NYU TANDON
PH.D. IN
ELECTRICAL ENGINEERING
Ongoing | New York, USA
CPI: N/A

IIT KANPUR
PH.D. IN
ELECTRICAL ENGINEERING
Ongoing | Kanpur, India
CPI: 9.5/10.0

B.TECH.+M.TECH. IN
ELECTRICAL ENGINEERING
May 2020 | Kanpur, India
UG CPI: 9.6/10.0
PG CPI: 10.0/10.0

COURSEWORK

* - Ongoing

POST-GRADUATE
Wave Propagation & Linear Systems*
Network Modelling and Analysis*
Internet Architecture/Protocols*
Statistical Signal Processing
Introduction to ML
Game Theory/Mechanism Design
Robust Statistical Methods

GRADUATE
Design of 4G/5G Standards
Convex Optimization
Analysis of 5G Wireless Networks
MIMO Wireless Communications

UNDERGRADUATE
Communication Systems
Digital Signal Processing
Probability and Statistics
Data Structures and Algorithms
Electromagnetic Theory

SKILLS

PROGRAMMING
Languages :
Python • C/C++ Software Utilities :
Proficient: MATLAB • LaTeX
• Keras/Tensorflow • PyTorch
Basic: MicroCap • Linux terminal

CO-CURRICULARS

Chief Editor, Vox Populi IIT Kanpur (2018-19)
Core Team (Academics), Counselling Service IIT Kanpur (2017-18)

MASTERS' THESIS

ENERGY EFFICIENCY IN BEYOND 5G COMMUNICATIONS
INDIAN INSTITUTE OF TECHNOLOGY, KANPUR — ARXIV PREPRINT|THESIS
Supervisor: Prof Rohit Budhiraja, EE — July 2019-May 2020

- Solved the problem of weighted sum energy efficiency (WSEE) maximization in full-duplex cell-free systems centrally and decentrally using ADMM
- Solving WSEE maximization for cell-free uplink using reinforcement learning

RESEARCH EXPERIENCE

SMART TRANSPORTATION USING WIRELESS NETWORKS
UNIVERSITY OF CALIFORNIA, SAN DIEGO (USA) — ABSTRACT | PRESENTATION
Mentor: Prof Xinyu Zhang, ECE — May – July 2019

- Set up a demo for the 5G forum showing end-to-end low-latency footage transmission from observer drone to UE (USRP in a car) over LTE using srsLTE.
- Elementary realisation of handoff on top of srsLTE, goal: ML based handoff.

POWER SCALING FOR MASSIVE MIMO UAV COMMUNICATIONS
UNDERGRADUATE PROJECT, IIT KANPUR — REPORT | PRESENTATION
Mentor: Prof Rohit Budhiraja, EE — July-November 2019

- Derived spectral efficiency bounds for power scaling in Massive MIMO UAV communication systems (perfect/imperfect CSI), validated via simulations.

APPLICATION OF DELAY IN MIMO WITH ONE-BIT QUANTIZERS
NEW YORK UNIVERSITY (USA) — END-TERM REPORT | REPOSITORY
Mentor: Prof Elza Erkip, ECE — May – July 2018

- Extended MIMO with one-bit quantization to incorporate delay at receiver end.
- Simulated capacity bounds to show marked improvement with unit delay.

PUBLICATION

[1] S. Datta, E. Sharma and R. Budhiraja, "Power Scaling for Massive MIMO UAV Communication System," in 12th IEEE/ACM COMSNETS, Bangalore, India, Jan 2020.

SELECT COURSE PROJECTS

WEIGHTED PSP AUCTION FOR RESOURCE ALLOCATION
CS711A Term Project under Prof Swaprava Nath, CSE — Project Report

LEARNING TO PAINT USING REINFORCEMENT LEARNING
CS771A Term Project under Prof Piyush Rai, CSE — Project Report

TRAJECTORY OPTIMIZATION IN UAV COMMUNICATIONS
EE609A Term Project under Prof Ketan Rajawat, EE — Term paper

MMWAVE BLOCKAGE ANALYSIS VIA STOCHASTIC GEOMETRY
EE698O Term Project under Prof Abhishek Gupta, EE — Term paper

CELLULAR CONNECTED UAV
EE677A Term Project under Prof Rohit Budhiraja, EE — Term paper

HEARTBEAT SENSOR | ANALOG ELECTRONICS LABORATORY PROJECT
Mentor: Prof B. Mazhari, EE | Report — February – May 2018

AWARDS

2020	Prime Minister's Research Fellowship	Among top EE PhD students in India
2020	Director's Gold Medal, IIT Kanpur	Outstanding all-round achievement
2020	Samares Kar Gold Medal, IIT Kanpur	Best undergraduate project in EE
2020	IITK Excellence in Community Services	Exemplary social service involvement
2019	SN Bose Scholar	Top 48 from India across disciplines
2017-19	Academic Excellence Award (thrice)	top 10% CPI in IIT Kanpur
2014	KVPY SA Scholarship Awardee	All India Rank 165