Arpan Mukherjee

Electrical, Computer, and Systems Engineering
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Education

Aug. 19-Present | **Rensselaer Polytechnic Institute**, Troy, NY
Ph.D. candidate, Electrical, Computer and, Systems Engineering
Grade: 3.94/4
Advisor: Prof. Ali Tajer

Jul. 17-May 19 | **IIT Kharagpur**, West Bengal, India
M.Tech., Department of Electronics and Electrical Communication Engineering
GPA: 9.19/10
Thesis: *Improved Adaptive Filtering Algorithms for Block-sparse System Identification*
Advisor: Prof. Mrityunjoy Chakraborty

Aug. 13-Jun. 17 | **Maulana Abul Kalam Azad University of Technology**, West Bengal, India
B.Tech., Electronics and Communication Engineering
Grade: 9.05/10
Graduation Project: *Circuit and Layout Design of VLSI embedded Register File Array*
Advisor: Prof. Krishanu Datta

Work Experience

Graduate Research/Teaching Assistant

Aug. 19-present | **Rensselaer Polytechnic Institute**, Troy, NY
Information Sciences Group
- Currently working on *robust best arm identification* in stochastic Multi Arm Bandits
- Developed an algorithm for *active binary classification* in random fields
- Developed an algorithm for *active learning* over networks.
Advisor: Prof. Ali Tajer

Jul. 17-May 19 | **IIT Kharagpur**, West Bengal, India
Digital Signal Processing Lab
-Devised algorithms for block-sparse system identification with application to spectrum sensing.
-Devised an imputation-based unbiased LMS algorithm for system identification under missing input data.
Advisor: Prof. Mrityunjoy Chakraborty
Teaching Assistantship
- Telecommunication Systems Lab. (Fall '18, Spring '19)
- Introduction to Electronics (Spring '19)

Jun. 15-Aug 15 | **Jadavpur University**, West Bengal, India
Department of Electronics & Tele-Communication Engineering
-Devised meta-heuristic algorithms for global routing in low-power VLSI circuits.
Supervisor: Prof. Subir Kumar Sarkar

Selected Publications

- A. Mukherjee, A. Tajer, P.-Y. Chen and P. Das, "Active Estimation from Multimodal Data", accepted in *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2021.
- A. Mukherjee, A. Tajer, P.-Y. Chen and P. Das, "Active Binary Classification of Random Fields", submitted to *IEEE International Symposium on Information Theory (ISIT)*, 2021.
- A. Mukherjee, A. Tajer, P. Das and P.-Y. Chen, "Active Learning for Sequential Estimation", to be submitted to the *IEEE Transactions on Signal Processing*, 2021.

- S. Mukhopadhyay and A. Mukherjee, "ImdLMS: An Imputation based LMS algorithm for Linear System Identification with Missing Input Data," *IEEE Transactions on Signal Processing.* vol. 68, pp. 2370-2385, 2020.

Awards/Fellowships

- B. Jayant Baliga '74 Graduate Student Fellowship Award, 2019-2020.
- MHRD PG Fellowship through GATE, 2017.

Selected Graduate Courses

- Stochastic Optimization & Reinforcement Learning
- Introduction to Optimization
- Pattern Recognition
- Distributed Systems & Sensor Networks (Learning)
- Detection & Estimation Theory
- Adaptive Systems and Signal Processing
- Digital Communication
- Telecommunication Switching Networks

Related Course Projects

- Active Learning for Worker Selection in Distributed Stochastic Optimization

  Implemented a distributed learning algorithm for parameter inference in a centralized setting. The server adaptively liases with a single worker in each round, and a Multi Arm Bandit based selection policy is implemented to enhance the fidelity of the estimate with minimum variance.

- CT Image reconstruction using ADMM

  Solved an ill-posed inverse problem which is also known to be sparse under certain transformation. Used ADMM under l_1 regularization with proximal gradient to reconstruct the original image.

- Matrix-Pattern based Ho-Kashyap Algorithm for data classification

  Implemented a Matrix-Pattern based Ho-Kashyap algorithm for data classification and tested it on the MNIST dataset, UCI wine dataset, UCI air-quality dataset and UCI water-treatment dataset.

Programming Skills

Python, Pytorch, MATLAB, Java, C

Service

2019 - present	Reviewer for IEEE Transactions on Signal Processing