Sourav Sahoo

Operations Research Center, Massachusetts Institute of Technology
Email ⋄ Website ⋄ Google Scholar ⋄ Github

Education

Doctor in Philosophy in Operations Research — Sept. 2023 - Present
Massachusetts Institute of Technology — CGPA: N/A
Advisor: Prof. Negin Golrezaei

Dual Degree (B.Tech & M.Tech) in Electrical Engineering — July 2017 - July 2022
Indian Institute of Technology, Madras — CGPA: 9.56/10.00
Advisor: Prof. Abhishek Sinha
Thesis: The k-experts Problem.

Publications and Preprints

(P1) Online Subset Selection using α-Core with no Augmented Regret.
S. Sahoo, S. Chaudhary, S. Mukhopadhyay, and A. Sinha.
Under Review.[Preprint]

(C3) Distributed Online Optimization with Byzantine Adversarial Agents.
S. Sahoo, A. Gokhale, and RK Kalaimani.
American Control Conference (ACC), 2022.[Paper]

(C2) `k-experts` - Online Policies and Fundamental Limits
S. Mukhopadhyay, **S. Sahoo**, and A. Sinha.
International Conference on Artificial Intelligence and Statistics (AISTATS), 2022.[Paper][Code]

(C1) A Segment Level Approach to Speech Emotion Recognition Using Transfer Learning
S. Sahoo, P. Kumar, B. Raman, and PP Roy.
Asian Conference on Pattern Recognition (ACPR), 2019.[Paper][Supplementary][Poster][Code]

(W1) Multi-Modal Detection of Alzheimer's Disease from Speech and Text.
A. Mittal*, **S. Sahoo***, A. Datar*, J. Kadiwala*, H. Shalu, and J. Mathew (* equal contribution)
International Workshop on Data Mining in Bioinformatics (BIOKDD), 2021.[Preprint].

Research Experience

Research Assistant — May 2021 - Feb 2023
Indian Institute of Technology, Madras — *Guide: Prof. Abhishek Sinha*

- Working on problems at the intersection of online learning, learning theory, and optimization.

Undergraduate Researcher — May 2021 - Sept 2021
Indian Institute of Technology, Madras — *Guide: Prof. Rachel Kalpana Kalaimani*

- Studied non-constrained, online distributed optimization in a multi-agent system in the presence of adversarial agents. We defined the notion of regret in the considered setting and proved it to be sublinear.

Undergraduate Researcher — Sept 2020 - July 2021
Indian Institute of Technology, Madras — *Guide: Prof. Kaushik Mitra*

- Developed a novel deep network, *LeRoSNet (Learning from Rolling Shutter Net)*, for high-speed video reconstruction from a single rolling shutter capture from a lensless camera.

Research Intern — May 2019 - July 2019
Indian Institute of Technology, Roorkee — *Guide: Prof. Balasubramanian Raman*

- Proposed a novel deep learning model that predicts emotion for multiple segments of a single audio clip and utilizes transfer learning to improve performance.

Professional Experience

Quantitative Research Analyst July 2022 - July 2023
JPMorgan Chase & Co. *Mumbai, India*

Data Science Intern Dec 2019 - Jan 2020
Gramophone - Transforming Agriculture *Bengaluru, India*

Selected Projects

SVRG-SO: SVRG for Stochastic Optimization Mar 2022 - May 2022
Stochastic Optimization Final Project

- Adapted the stochastic variance reduced gradient (SVRG) optimization algorithm for stochastic optimization. Conducted theoretical analysis to recover optimal convergence rate for the problem setting.[Technical Report]

Stochastic Mirror Descent in Overparameterized Models June 2020 - July 2020
Convex Optimization Term Paper

- Designed novel experiments to prove the theoretical results on convergence and implicit regularization for overparameterized linear regression models and reproduced the experimental results for deep neural networks.[Technical Report][Code]

Awards and Honors

Awarded **Caltech Summer Undergraduate Research Fellowship (SURF)** in 2020 (rescinded).

Selected to attend **Google Research India AI Summer School**, 2020.

All India Rank 584 among 200,000 candidates in JEE Advanced 2017.

All India Rank 49 among 1.5 million applicants in JEE Mains 2017.

Gold Medal in Indian National Physics Olympiad, 2017 and was offered provisional admission in Chennai Mathematical Institute (CMI).

All India Rank 18 in Kishore Vaigyanik Protsahan Yojana, 2015 and was offered provisional admission with a fellowship in Indian Institute of Sciences (IISc), Bangalore.

Certificate of Merit for promising performance in Indian National Mathematical Olympiad, 2015.

Coursework and Technical Skills

Courses: Applied Linear Algebra, Convex Optimization, Estimation Theory, Advanced Probability Theory, Distributed Optimization, Information Theory, Theoretical Machine Learning, Linear Optimization, Stochastic Optimization
Programming Languages: Python, C++
Software & Libraries: Tensorflow, PyTorch, Numpy, CVX, LaTeX

Teaching

Teaching Assistant for introductory programming class for first-year students. Spring 2022

Teaching Assistant for introductory probability class for graduate students. Fall 2021

Teaching volunteer at KV-IIT for science and mathematics. 2017 – 2018

Professional Services

Assistant reviewer for COMSNETS 2022, AISTATS 2022.
Reviewer for IEEE Transactions on Automatic Control.