

# Sourav Sahoo

Operations Research Center, Massachusetts Institute of Technology

[Email](#)  $\diamond$  [Website](#)  $\diamond$  [Google Scholar](#)  $\diamond$  [Github](#)

## Education

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### Doctor in Philosophy in Operations Research

Massachusetts Institute of Technology

Advisor: [Prof. Negin Golrezaei](#)

Sept. 2023 - Present

GPA: 5.0/5.0

### Dual Degree (B.Tech & M.Tech) in Electrical Engineering

Indian Institute of Technology, Madras

Advisor: [Prof. Abhishek Sinha](#)

Thesis: The  $k$ -experts Problem.

July 2017 - July 2022

GPA: 9.56/10.00

## Publications and Preprints

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- (P2) Bidding in Uniform Price Auctions for Value Maximizing Buyers.  
N. Golrezaei and **S. Sahoo**.  
*Under Review*.[\[Preprint\]](#)
- (P1) Online Subset Selection using  $\alpha$ -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

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### Research Assistant

Indian Institute of Technology, Madras

May 2021 - Feb 2023

Guide: [Prof. Abhishek Sinha](#)

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

### Undergraduate Researcher

Indian Institute of Technology, Madras

May 2021 - Sept 2021

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

Indian Institute of Technology, Madras

Sept 2020 - July 2021

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

Indian Institute of Technology, Roorkee

May 2019 - July 2019

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

JPMorgan Chase & Co.

July 2022 - July 2023

Mumbai, India

### Data Science Intern

Gramophone - Transforming Agriculture

Dec 2019 - Jan 2020

Bengaluru, India

## Selected Projects

### SVRG-SO: SVRG for Stochastic Optimization

Stochastic Optimization Final Project

Mar 2022 - May 2022

- 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

Convex Optimization Term Paper

June 2020 - July 2020

- 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,  $\text{\LaTeX}$

## 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

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Assistant reviewer for COMSNETS 2022, AISTATS 2022.

Reviewer for IEEE Transactions on Automatic Control.