

# Sourav Sahoo

Indian Institute of Technology Madras  
[Email](#)  $\diamond$  [Website](#)  $\diamond$  [Google Scholar](#)  $\diamond$  [Github](#)

## Education

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

Indian Institute of Technology, Madras

Thesis: The  $k$ -experts Problem.[\[Link\]](#)

July 2017 - July 2022

CGPA: 9.56/10.00

## Publications and Preprints

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(P1) Online Subset Selection using  $\alpha$ -Core with no Augmented Regret.

**S. Sahoo**, S. Mukhopadhyay, and A. Sinha.

*Submitted at International Conference on Algorithmic Learning Theory (ALT)*, 2023.[\[Preprint\]](#)

(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.[\[Paper\]](#)

(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 - Present

Guide: [Prof. Abhishek Sinha](#)

- Working on problems at 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

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**Quantitative Research Analyst**

JPMorgan Chase & Co.

July 2022 - Present

Mumbai, India

## Selected Projects

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### SVRG-SO: SVRG for Stochastic Optimization

Mar 2022 - May 2022

*Stochastic Optimization Final Project*

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

### An Empirical Study on Online Agnostic Boosting

Oct 2020 - Dec 2020

*Theoretical Machine Learning Final Project*

- Conducted a study on an [novel online agnostic boosting algorithm](#), which efficiently converts an online convex optimizer to an online booster, by performing experiments on different datasets to measure the proposed algorithm's empirical performance. [\[Technical Report\]](#) [\[Video\]](#) [\[Code\]](#)

### 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

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Awarded **Caltech Summer Undergraduate Research Fellowship (SURF)** in 2020\* and 2021.

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

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**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

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Teaching Assistant for introductory programming class for freshmen 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

Online tutor for physics and mathematics for JEE aspirants at [Melvano](#).

2017 – 2018

## Professional Services

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Assisted reviewing for COMSNETS 2022.

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