Spandan **Senapati**

CS Ph.D. student, University of Southern California

Los Angeles, California, USA

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Education

University of Southern California

Los Angeles, California

Ph.D. in Computer Science, advised by Prof. Haipeng Luo and Prof. Vatsal Sharan — *Aug 2023 - Present*

- Research Interests: Statistical Learning Theory, Online Learning, Optimization
- GPA: **4.0/4.0**; Coursework: Theory of Machine Learning, Large Scale Optimization for Machine Learning, Advanced Analysis of Algorithms (ongoing), Information Theory (ongoing)

Indian Institute of Technology Kanpur

Kanpur, Uttar Pradesh

Bachelor of Technology in Computer Science and Engineering — *July 2018 - May 2022*

- Cumulative Performance Index (CPI): **9.1/10.0** (graduated with **Distinction**)
- Awarded **Proficiency Medal** at the 55th Convocation for the best undergraduate project done by a graduating student in the CSE department
- **Academic Excellence Award** (2018-19, 2019-20): Awarded for excellent academic performance in an academic year
- Relevant Coursework: Convex Optimization, Optimization for Big Data, Advanced Algorithms, Quantum Computing, Probability Theory, Game Theory and Mechanism Design, Topics in Probabilistic Modelling and Inference

Experience

Indian Institute of Technology Kanpur

SPiN Lab, IIT Kanpur

Graduate Research Assistant, Advisor: Prof. Ketan Rajawat — *Aug 2022 - May 2023*

- Project on Sharpened Lazy Incremental Quasi-Newton (SLIQN) method, the first algorithm with an $\mathcal{O}(d^2)$ per-iteration complexity and an explicit non-asymptotic superlinear convergence rate
- Paper accepted to AISTATS 2024 (Valencia, Spain)

Tata Institute of Fundamental Research

Remote

Internship, Advisor: Prof. Rahul Vaze — *Aug 2022 - May 2023*

- Project on Online Convex Optimization with Switching Cost and Delayed Gradients. Proposed an algorithm and a novel analysis technique to bound its competitive ratio for the OCO-S problem with delayed gradients. Derived nearly matching lower bounds for the problem
- Paper accepted to IFIP Performance 2023 (Chicago, USA)

Related Search Team - Microsoft Bing

Microsoft IDC, Hyderabad

Data Scientist intern, RS STCI Team — *May 2021 - July 2021*

- Project on Topics in Organised Map of Suggestions (TOMS). Developed an efficient clustering algorithm and built an interface which automated the clustering process and allowed doing several large-scale experiments seamlessly
- Offered a Pre-Placement offer (PPO) for a full-time data scientist position

Publications and Preprints

Optimal Multiclass U-Calibration Error and Beyond

[Arxiv]

Haipeng Luo$^{\alpha-\beta}$, **Spandan Senapati**$^{\alpha-\beta}$, Vatsal Sharan$^{\alpha-\beta}$ — *May 2024*

Preprint. Under review

Sharpened Lazy Incremental Quasi-Newton Method

[PMLR][Arxiv]

Aakash Lahoti*, **Spandan Senapati***, Ketan Rajawat, Alec Koppel — *Jan 2024*

The 27th International Conference on Artificial Intelligence and Statistics (AISTATS)

Online Convex Optimization with Switching Cost and Delayed Gradients

[PER][PEVA][Arxiv]

Spandan Senapati, Rahul Vaze — *August 2023*

IFIP Performance 2023. Full paper: Elsevier Performance Evaluation (PEVA), Extended abstract: ACM SIGMETRICS Performance Evaluation Review (PER)

Proximal Algorithms for Smoothed Online Convex Optimization with Predictions

[IEEE Xplore][Arxiv]

Spandan Senapati, Ashwin Shenai, Ketan Rajawat — *August 2023*

IEEE Transactions on Signal Processing

Note: $\alpha - \beta$ denotes alphabetical ordering, $*$ denotes equal contribution

Report

Fall'23 **Failure Cases of Empirical Risk Minimization (ERM) and Structural Risk Minimization (SRM),** CSCI 699 *[Report]*

Honors & Awards

2022 **Proficiency Medal,** Best undergraduate project done by a graduating student from the CSE department *IIT Kanpur, India*
2018, 19 **Academic Excellence Award,** For excellent academic performance in an academic year *IIT Kanpur, India*
2018 **All India Rank 161,** Joint Entrance Examination Main, among 1.5 Million Candidates *India*
2018 **All India Rank 191,** Joint Entrance Examination Advanced, among 200000 Candidates *India*
2017 **All India Rank 24,** KVPY Scholarship, Indian Institute of Science and Government of India *Bangalore, India*
2016 **NTSE Scholar,** Awarded to the top 1000 students in the nation by the Government of India *India*
2016 **IJSO OCSC,** Selected for the team selection camp of the International Junior Science Olympiad(top 35 India) *Mumbai, India*
2018 **National Top 1% ,** National Standard Examination in Physics(NSEP) among 200000 Candidates *India*
2017 **National Top 1% ,** National Standard Examination in Physics(NSEP) among 200000 Candidates *India*
2018 **National Top 1% ,** National Standard Examination in Chemistry(NSEC) among 200000 Candidates *India*
2017 **State Top 1% ,** National Standard Examination in Astronomy(NSEA) *India*
2018 **State Top 1% ,** National Standard Examination in Astronomy(NSEA) *India*
2017 **3rd in State,** Represented Odisha State in the Indian National Maths Olympiad(INMO) *India*
2016 **State Top 35,** Represented Odisha State in the Indian National Maths Olympiad (INMO) *India*

Travel Grants

2024 **GSG Professional Development Fund,** Issued by USC
2023 **National Science Foundation (NSF) Student Travel Award,** Issued by IFIP Performance 2023

Talks

2023 **IFIP Performance 2023,** Online Convex Optimization with Switching Cost and Delayed Gradients *Chicago, USA*

Teaching

Fall'24 **Teaching Assistant,** Theoretical Machine Learning (CSCI 678) *USC*

Service

Reviewer *USC*

Advances in Neural Information Processing Systems (Neurips) 2024 *July 2024 - Aug 2024*

- Reviewed 5 papers as a part of the reviewing process of Neurips 2024

SHINE Mentor *USC*

USC Summer High School Intensive in Next Generation Engineering (SHINE) *June 2024 - July 2024*

- Mentored a high school student in building an online learning-based program that can beat a human user repeatedly in a game of rock-paper-scissors

Coordinator *IIT Kanpur*

Special Interest Group in Machine Learning(SIGML) *May 2021 - Nov 2021*

- Responsible for the smooth conduction of talks in different active areas of research in Machine Learning

Student Guide *IIT Kanpur*

Counselling Service *July. 2019 - July 2020*

- Responsible for the guidance and mentorship at a personal level of 5 freshman undergraduates and the smooth conduction of various events in the Orientation Session for the incoming Batch of Y19

Project Mentor *IIT Kanpur*

Association of Computing Activities (ACA) *Jan 2020 - Jun 2020*

- Introduced Inference algorithms in Bayesian ML to a group of freshman undergraduates, and prepared assignments to track progress