Spandan Senapati

CS PH.D. STUDENT, UNIVERSITY OF SOUTHERN CALIFORNIA

Los Angeles, California, USA

✉ ssenapat@usc.edu | ⌂ fellow4.github.io | 🎓 Spandan Senapati

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 (on-going)

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	**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