Adit Jain

Resume

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Research Interests

Reinforcement Learning, Stochastic and Linear Bandits, Distributed Optimization, Statistical Inference

Education

2022 - Ongoing **Cornell University**, *Doctorate of Philosophy (Ph.D.)*, 4.0/4.0.
Electrical and Computer Engineering — Advisor: Prof. Vikram Krishnamurthy

2018–2022 **Indian Institute of Technology Guwahati**, *Bachelor of Technology*.
Major in Electronics and Communication Engineering — GPA – 9.54/10 | 1st in batch of 128
Minor in Computer Science Engineering — GPA – 9.4/10 | 1st in batch of 45

Experience

May 2024 - Aug 2024 **PhD Research Intern**, Adobe Research, Digital Experience Cloud.
- Developed an online algorithm for selecting samples to be annotated, which leverages difficulty feedback from the annotator and considers the constraint that only a single expert is available
- Proved regret guarantees for an explore and exploit algorithm for high dimensional sparse bandits and showed that it achieves sublinear regret even with a blocking constraint and without the hard sparsity constraint

Jul 2023 - May 2024 **Graduate Assistant**, Cornell Center for Social Sciences, Cassian D' Cunha.
- Managed the cloud infrastructure for the CCSS, which provides computational resources for researchers
- Improved log analytics, preemptive measures, and resource scalability for the Azure-based server environment

May - Jul 2021 **Summer Analyst**, Goldman Sachs, Cross Asset Quant Strats.
- Clustered counterparties using Frequent Itemseting for Credit Valuation Adjustment (CVA) calculations
- Improved computational performance by up to 40% for Foreign Exchange and Commodities CVA calculations
- **Pre Placement Offer** was extended for a full-time role based on performance

May 2020 - Jul 2022 **Research Assistant**, Haas School of Business, UC Berkeley, Prof. Abhishek Nagaraj.
- Helped parameterize and program an experiment on the streetlight effect of information on exploration
- Analyzed and modeled heterogeneity in business's closure policies in response to Covid-19
- Created a dashboard for the impact of different reopening policies on health and economic outcomes

Publications

Journal **Structured Reinforcement Learning for Incentived Stochastic Covert Optimization**, *A. Jain, V. Krishnamurthy*, Control System Letters (L-CSS and CDC), May 2024, Accepted, Early Access, Code.

Journal **Controlling Federated Learning for Covertness**, *A. Jain, V. Krishnamurthy*, Transactions on Machine Learning Research (TMLR), January 2024, Accepted, OpenReview, Code.

Journal **Controlling Stochastic Gradient Descent using Stochastic Approximation for Robust Distributed Optimization**, *A. Jain, V. Krishnamurthy*, Numerical Algebra, Control and Optimization (NACO), August 2024, Accepted; To Appear.

Journal **Interpretable Deep Image Classification using Rationally Inattentive Utility Maximization**, *K. Pattanayak, V. Krishnamurthy, A. Jain*, IEEE Journal of Selected Topics in Signal Processing, February 2024, Accepted IEEE Link, Code.

Conference **Identifying Hate Speech Peddlers in Online Platforms. A Bayesian Social Learning Approach for Large Language Model Driven Decision-Makers**, *A. Jain, V. Krishnamurthy*, CDC 2024, Accepted, Code.

Conference **Bimodal Bandits: Max-Mean Regret Minimization**, *A. Jain, S. Bhatt, V. Krishnamurthy, A. Koppel*, Asilomar Conference, July 2024, Accepted.

Conference **Optimal Joint Antenna Selection and Beamforming for an Intelligent Reflecting Surfaces Aided Multiuser System**, *A. Jain, S. Kashyap*, IEEE WCNC, Dec 2023, Accepted IEEE Link.

Conference **Low Complexity Passive Beamforming Algorithms for Intelligent Reflecting Surfaces with Discrete Phase-Shifts over OFDM Systems**, *A. Jain, R. Gowda, S. Kashyap, R. Sarvendranath*, National Conference on Communications, May 2022, Accepted, IEEE Link.

Achievements & Honours

2023-2025 **Data Science Fellowship**, *Cornell Center for Social Sciences*.

2022 **Institute Silver Medalist**, *IIT Guwahati*.

2020 - 21 **Institute Merit Scholarship 2021**, *IIT Guwahati*, full tuition fee waiver for ranking 1st in department.

2019 - 20 **Institute Merit Scholarship 2020**, *IIT Guwahati*, full tuition fee waiver for ranking 1st in department.

2018 **JEE Advanced**, Secured 99.996 percentile among 150K students with a rank of 1117.

2018 **JEE Mains**, Secured 99.999 percentile among 1.5M students with a rank of 237.

Technical Skills

Languages Python, R, MATLAB, Rust, C++, JavaScript

Frameworks PyTorch, PySpark, Pandas, axolotl, langchain, Plotly, numpy/scipy, OpenCV

Web Tech. jQuery, d3.js, React, Django, Flask, HTML, CSS

Presentation LaTeX, Figma, Powerpoint

Relevant Courses

* AS/Outstanding Grade

Math. & EECS Statistical Learning Theory, Measure Theoretic Probability, Mathematical Statistics, Bayesian Estimation and Stochastic Optimization*, Advanced Statistical Algorithms*, Data Structures & Algorithms*

Side Projects

Jan - Jul 2021 **Blip: Platform to help interviewees for Internships**, *Co-Founder*.

- Bootstrapped a product to help students prepare better for the internship season using seniors' experiences
- Garnered 1.2K MAUs with a total of 50K views and 5 mins average visit duration in 3 months of launch

Jul - Aug 2020 **Dimension Reduction of Random Effects for Generalized Linear Mixed Models**, *Dr. Christina Knudson, University of St. Thomas*, Link: Code & Paper.

- Sped up Generalized Linear Mixed Models using Dimension Reduction techniques on random effects. Paper received 2nd prize in Undergraduate CAM Presentation
- Researched on Monte Carlo Likelihood Approximation used to calculate likelihood function of GLMM.

Bachelors Thesis

Title *Methods for IRS Passive Beamforming*, Supervisor: Dr. Salil Kashyap Link: Reports

Description

- Came up with a strongest tap based heuristic method for Passive Beamforming in OFDM based IRS setup with discrete reflection coefficients
- Devised algorithm for Antennae Selection in a multi-user MISO setup using manifold optimization.

Additional Coursework

Math Probability & Random Processes, Linear Algebra, Multi-variable Calculus, ODEs

ECE Network Coding, Information Theory & Coding, Digital Circuits*, Video Analytics*, Digital Communications*, Digital Signal Processing, Data-Driven System Theory, Adv. Control Systems

References

Vikram Krishnamurthy,
Professor,
ECE, Cornell University,
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Advisor

Salil Kashyap,
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EEE, IIT Guwahati,
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BTP Supervisor

Abhishek Nagaraj,
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RA Supervisor