Adit Jain

Resume

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Research Interests

Statistical Inference, Reinforcement Learning, Learning Theory, Stochastic and Distributed Optimization

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 – 9.49/10 | 1st in batch of 128
Minor in Computer Science Engineering — GPA – 9.25/10 | 1st in batch of 45

Experience

Jul 2023 - Dec 2023 **Graduate Assistant**, Cornell Center for Social Sciences, Cassian D' Cunha.
- Managing the cloud infrastructure for the CCSS which provides computational resources for researchers
- Improving 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 upto 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 modelled heterogeneity in business's closure policies in response to Covid-19
- Created a dashboard for impact of different reopening policies on health and economic outcomes

Publications

Journal **Controlling Federated Learning for Covertness**, *A. Jain, V. Krishnamurthy*, Transactions on Machine Learning Research (TMLR), August 2023, Submitted, arXiv Preprint,Code.

Conference **Structured Reinforcement Learning for Robust Federated Learning**, *A. Jain, V. Krishnamurthy*, IEEE International Conference on Acoustics, Speech, and Signal Processing, September 2023, Submitted.

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 and Presented, IEEE Link.

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

Technical Skills

Languages Python, R, MATLAB, Rust, C++, JavaScript
Frameworks PyTorch, PySpark, Pandas, 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*

Achievements & Honours

2023 **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.

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.

Aug - Nov 2021 **Advanced Face Track Linking for efficient video analytics**,
Dr. Prithvijit Guha, IIT Guwahati, Link: Code.

- Implemented face tracking using Haar Cascade of frontal-profiles using openCV and dlib
- Natively clustered different tracks using GMM, agglomerative clustering and DBSCAN on Facenet embeddings

Aug - Nov 2020 **Term Presentation and Tutorial on Particle And Kalman Filters**,
Dr. Hanumant Singh Shekhawat, IIT Guwahati, Link: Code & Presentation.

- Studied Particle and Kalman Filters with applications for online tracking using measurements from sensors
- Delivered a tutorial simulating real life motion sensor using Kalman Filtering and Importance Sampling.

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.
- Participated and came 12^{th} in IEEE Signal Processing Cup 2021 organized by ICASSP
- Surveyed reduction in Channel Estimation time by using different patterns like Hadamard matrix for turning on the PIS elements during training phase

Additional Coursework

Math Probability & Random Processes, Linear Algebra, Multi-variable Calculus, Ordinary Differential Equations

CS Computer Architecture, Internet of Things, Computer Networks

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

References

Vikram Krishnamurthy,
Professor,
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Advisor

Salil Kashyap,
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EEE, IIT Guwahati,
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BTP Supervisor

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RA Supervisor