ALHAD SETHI

+91 9643359358 ◇ New Delhi, India

alhadsethi@iisc.ac.in ◇ LinkedIn ◇ Github

EDUCATION

Indian Institute of Science (IISc), Bengaluru, *IN* Aug 2025 - May 2027 (expected)
M. Tech. (Research) in Electronics and Communication Engineering CGPA: 8.23/10

- Ongoing research in *bandit algorithms and sequential statistics with Markovian data* advised by Prof. Shubhada Agrawal.

Indraprastha Institute of Information Technology (IIIT), Delhi, *IN* Jul 2021 - Apr 2025
B. Tech. (Honors) in Computer Science and Applied Mathematics CGPA: 9.37/10

- *Department Rank 1*, awarded **Institute Silver Medal** for highest CGPA in graduating branch.
- **Thesis**: 'Learning from Dependent (non-i.i.d.) data,' advised by Prof. Manuj Mukherjee.
- Teaching assistant for Probability & Statistics (Winter 2023 term) & Statistical Inference (Winter 2025 term).

PUBLICATIONS & PREPRINTS

1. **Alhad Sethi**, Kavali Sofia Sagar, Shubhada Agrawal, Debabrota Basu, P.N. Karthik, "Asymptotically Optimal Sequential Testing with Markovian Data," *International Conference on Machine Learning (ICML) 2026* [paper]
2. Manuj Mukherjee, Sagnik Chatterjee, **Alhad Sethi**, "Perfect Secret Key Generation for a class of Hypergraphical Sources," *International Symposium on Information Theory (ISIT) 2026* [paper]
3. Sagnik Chatterjee*, Manuj Mukherjee*, **Alhad Sethi*** "Generalization Bounds for Dependent Data using Online-to-Batch Conversion," *Artificial Intelligence and Statistics (AISTATS) 2025* [paper, poster]

   $*$ denotes equal contribution.

EXPERIENCE

Quantitative Research Intern, Central Research Team, Millennium Management, Mumbai, *IN* May 2024 - July 2024

- Alpha signal research for equity markets using machine learning and statistics for risk-neutral medium frequency trading.
- Designed advanced feature selection and robust outlier detection techniques, extending prior research to build effective alpha modeling pipelines, improving Sharpe ratio across signals.

PROJECTS

FedProx: Implementation and Evaluation [GitHub, Report] Sept 2024 - Dec 2024

- Implemented FedProx Algorithm for learning in heterogeneous federated networks, extending standard FedAvg by penalizing clients in order to **reduce client drift** and achieve faster convergence.
- Designed experiments to test algorithm on i.i.d. and non-i.i.d. splits of training data to evaluate performance under **statistical heterogeneity**.

Studying Risk Aversion via Optimal Stopping [Report] Sept 2024 - Nov 2024

- Proposed a behavioural economics experiment to evaluate risk aversion among rational undergraduate students in a quantitative vs non-quantitative field via an online, **optimal stopping** decision algorithm dependent on each student's utility.

HONORS & ACHIEVEMENTS

- Secured *All India Rank 110* in Data Science & Artificial Intelligence, Graduate Aptitude Test in Engineering (GATE) 2025.
- Awarded **Dean's Award for Academics** twice for academic excellence in the academic years between 2022-24.
- Awarded **Summer Undergraduate Research Fellowship** (SURF) grant worth Rs. 40,000 by Institute Innovation Council, IIITD for project entitled 'Realising Excitons in 2D Janus Materials & Exploring the Possibility of Stable Qubits'.
- Awarded **Kishore Vaigyanik Protsahan Yojana (KVPY)** Fellowship by the Department of Science and Technology, Government of India. (*All India Rank 911* out of more than 100,000 candidates.)
- Secured *All India Rank 2* in Undergraduate Entrance Examination (UGEE) conducted by IIIT Hyderabad
- Competed extensively in quizzing events, winning 40+ podiums; hosted and organized 15+ quizzes as quizmaster.

SKILLS

C, Java, Python, PyTorch, Keras, TensorFlow, QuantumEspresso, Yambo

RELEVANT COURSEWORK

Probability Theory, Multi-Armed Bandits, Theories of Deep Learning, Distributed & Federated Machine Learning, Information Theory, Modern Algorithm Design, Statistical Machine Learning, Theory of Computation, Algorithm Design & Analysis, Advanced Linear Algebra, Statistical Inference, Stochastic Processes, Convex Optimization, Discrete Structures