AARADHYA PANDEY

Graduate student at ORFE Department, Princeton University

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Graduate and Undergraduate Education

Princeton University (advised by Sanjeev Kulkarni and Arian Maleki) *New Jersey*

PhD in ORFE with Gordon Wu fellowship: 'awarded to the most outstanding incoming doctoral students in engineering' Sep. 2021 - present

Indian Institute of Science (IISc) *Bangalore*

Bachelor of Science in mathematics with CGPA 9.6/10 : discipline rank 1, was awarded the institute gold medal. Sep. 2017 - Jun. 2021

Research interests and Current Projects

Primary interests	Probability, Statistics, Information theory with applications in differential privacy, unlearning, and spin glasses
Quantum privacy	Quantum f-differential privacy: A hypothesis testing approach
Infinite divisibility	Quantum infinitely divisible states: A genuinely quantum phenomenon
Machine unlearning	Distributional machine unlearning: A hypothesis testing approach
Spin glass theory	Multivariate version of the Ghirlanda Guerra identities: an application to the matrix of spin correlations

Publications and Preprints

[1] **Gaussian Certified Unlearning in High Dimensions: A Hypothesis Testing Approach**. Aaradhya Pandey, Arnab Auddy, Haolin Zou, Arian Maleki, Sanjeev Kulkarni. arXiv:2510.13094 (stat.ML)

[2] **Exact recovery in Gaussian weighted stochastic block model and planted dense subgraphs: Statistical and algorithmic thresholds**. Aaradhya Pandey, Sanjeev Kulkarni. arXiv:2402.12515 (math.ST)

[3] **Community detection in the hypergraph stochastic block model and reconstruction on hypertrees**. Yuzhou Gu, Aaradhya Pandey. *Proceedings of the 37th Conference on Learning Theory*, PMLR 247:2166–2203. PDF | Proceedings

Invited talks and presentations

May 2025	Gave a tutorial on Information Theory and differential privacy at TIFR CAM	*Bangalore*
May 2025	Presented my work on the Gaussian certified unlearning paper at IISc	*Bangalore*
Jan 2025	Presented my work on the correlaion matrix of spin glasses at IISc and TIFR CAM	*Bangalore*
Oct 2024	Presented my work on Stochastic block model papers at Michigan State University	*Michigan*
Feb 2024	Our joint work on Stochastic block model paper was presented at the Institute of Advanced Study	*Princeton*

Teaching and organization

2022 – 2026	Teaching assistant for undergraduate probability, statistics, game theory, networks, signals and systems	*Princeton*
2022 – 2024	Organized over several semesters a student reading group in high dimensional probability and statistics	*Princeton*

Fellowships and Achievements

2021 – 2026	Gordon Wu fellow : Awarded to the most outstanding incoming doctoral students in engineering	*Princeton*
CSIR NET 2020	Cleared with an all-India rank 1 in the entrance exam for mathematics PhD programs in India	*India*
2017 – 2021	KVPY fellow : Prestigious fellowship program for Indian undergraduate students interested in science	*Bangalore*
IIT JEE 2017	Cleared with an all-India rank of 305 (1 million participants) for undergraduate admission at IITs	*India*
Summer 2020	DAAD WISE : Prestigious fellowship for a funded summer project in Germany	*Bonn*

References

- **Arian Maleki**, Professor of Statistics, Columbia University arian@stat.columbia.edu
- **Sanjeev Kulkarni**, William R. Kenan Jr. Professor of ECE and ORFE, Princeton University kulkarni@princeton.edu