Ashwin Padaki

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Summary

- **PhD Student in Computer and Information Science**, University of Pennsylvania
- **Research:** provably efficient algorithms for nearest neighbor search, clustering, and related problems.

Education

University of Pennsylvania — Philadelphia, PA
Ph.D in Computer and Information Science — *2024 – 2029 (expected)*

Advised by Sanjeev Khanna and Erik Waingarten.

Graduate Coursework: Algorithms for Massive Data, Randomized Algorithms, Machine Learning Theory

Columbia University — New York, NY
B.A. in Computer Science, Mathematics — *2020 – 2024*

GPA: 4.06/4

Selected CS Coursework: Advanced Algorithms, Computational Complexity, Computational Learning Theory, Convex Optimization, Cryptography, Differential Privacy, Quantum Computing

Selected Math Coursework: Algebraic Geometry, Algebraic Number Theory, Analysis, Probability Theory

Publications

(authors ordered alphabetically by last name)

1. Sanjeev Khanna, **Ashwin Padaki**, Erik Waingarten. Sparse Navigable Graphs for Nearest Neighbor Search: Algorithms and Hardness. In Submission.
2. Sanjeev Khanna, **Ashwin Padaki**, Krish Singal, Erik Waingarten. A Polynomial Space Lower Bound for Diameter Estimation in Dynamic Streams. *Accepted to FOCS 2025.*
3. Karthik C. S., Henry Fleischmann, Kyrylo Karlov, **Ashwin Padaki**, Styopa Zharkov. Inapproximability of Maximum Diameter Clustering for Few Clusters. *Proceedings of the 2025 Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*. 2025
4. Josh Alman, Yunfeng Guan, **Ashwin Padaki**. Smaller Low-Depth Circuits for Kronecker Powers. *Proceedings of the 2023 Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*. 2023

Talks

1. Inapproximability of Maximum Diameter Clustering for Few Clusters, SODA 2025

Selected Work Experience

Teaching Assistant — Sep 2022 – Dec 2023
Columbia University — *New York, NY*

- Cryptography (Fall 2023), Computational Complexity (Spring 2023), Real Analysis (Fall 2022).

Quantitative Trader Intern — Jun 2022 – Aug 2022
Optiver — *Chicago, IL*

- Developed, backtested, and implemented high-frequency trading strategies for stock options.

Service

Mentor Sep 2023 – Dec 2023

Columbia Undergraduate Learning Seminar in Theoretical Computer Science *New York, NY*

- Organized and taught a seminar on Boolean function analysis for undergraduate students.

Achievements

National Science Foundation (NSF) Graduate Research Fellow 2024

Phi Beta Kappa Inductee 2024

Putnam Mathematical Competition, Top 500 Scorer 2022