Krish Singal

Contact

`Personal website:` https://krishsingal.github.io
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Research Interests

I am broadly interested in theoretical computer science and machine learning. Recently, I have been thinking about problems related to efficient computation in machine learning systems.

Education

University of Pennsylvania 2024–2029 (Expected)

- PhD Candidate in Computer Science
- Advised by Erik Waingarten and Sanjeev Khanna

Columbia University 2020–2024

- Bachelor of Science in Computer Science, Magna Cum Laude

Industry Experience

Applied Scientist Intern, Amazon Web Services Aug 2026 – Present

Software Engineering Intern, Apple May 2022 – Aug 2022

Software Engineering Intern, Amazon Web Services May – Aug 2021

Selected Publications

Inner Product Aware Quantization: Provably Fast, Accurate, and Adaptive Algorithms
Krish Singal, Nathan White.
Preprint.

A Polynomial Space Lower Bound for Diameter Estimation in Dynamic Streams
Sanjeev Khanna, Ashwin Padaki, Krish Singal, Erik Waingarten.
Foundations of Computer Science (FOCS) 2025

MC^2: Rigorous and Efficient Directed Greybox Fuzzing
Abhishek Shah, Dongdong She, Samanway Sadhu, Krish Singal, Peter Coffman, Suman Jana.
ACM Conference on Computer and Communications Security (CCS) 2022.
Honorable Mention Best Paper Award

Talks

A Polynomial Space Lower Bound for Diameter Estimation in Dynamic Streams

- Foundations of Computer Science (FOCS), December 2025
- UPenn Theory Seminar, December 2025

On the Size and Complexity of Scrambles

- Joint Mathematics Meetings (JMM), January 2024

Teaching and service

I have served as a teaching assistant for the following course offerings

- Algorithms for Big Data, taught by Anindya De and Erik Waingarten (Summer 2026, Spring 2026, Fall 2025)
- Advanced Algorithms, taught by Alexandr Andoni (Spring 2024)
- Computational Complexity, taught by Henry Yuen (Fall 2023)
- Analysis of Algorithms, taught by Christos Papadimtriou (Spring 2023, Fall 2022)

In Fall 2023, I co-led a seminar on the Analysis of Boolean Functions as part of the Columbia Undergraduate Learning Seminar in Theoretical Computer Science.

I have served as a sub-reviewer for: STACS 2026

Coursework Randomized Algorithms, Convex Optimization, Machine Learning Theory, Algorithms for Massive Data, Zero-Knowledge Proofs, Complexity Theory, Operating Systems, Distributed Systems, Quantum Computing.

Skills *Programming Languages*: C/C++, Python, Java, LaTeX, GoLang, Rust
Languages: English (native, fluent), Hindi (full professional fluency), Spanish (full professional fluency)