

Alexander (Alex) Hoover

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Research Interests:

- **Cryptography:** structured encryption, lower bounds, information theory, and post-quantum security
- **Computer Security:** database security and privacy

Education

University of Chicago, 2024 PhD in Computer Science, Advisor: David Cash
(expected)

University of Chicago, 2021 MS in Computer Science, Advisor: David Cash

Rochester Institute of Technology, 2018 BS in Computer Science and Applied Mathematics (double major)
GPA: 3.86 / 4.0

Conference Publications

- David Cash, Andrew Drucker, and Alexander Hoover. "A Lower Bound for One-Round Oblivious RAM." In Theory of Cryptography Conference, pp. 457-485. Springer, Cham, 2020.
- Jonathan M. Baker, Casey Duckering, Alexander Hoover, and Frederic T. Chong. "Time-sliced quantum circuit partitioning for modular architectures." In Proceedings of the 17th ACM International Conference on Computing Frontiers, pp. 98-107. 2020.
- Zack Fitzsimmons, Edith Hemaspaandra, Alexander Hoover, and David E. Narváez. "Very hard electoral control problems." In Proceedings of the AAI Conference on Artificial Intelligence, vol. 33, pp. 1933-1940. 2019.

Pre-print Papers

- Ryan Seah, Daren Chu, Alexander Hoover, Ruth Ng. "LAMA: Leakage Abuse Attacks Against Microsoft Always Encrypted." [Submitted]
- Ruth Ng, Alexander Hoover, David Cash, and Eileen Ee. "Structured Encryption for Indirect Addressing." Cryptology ePrint Archive (2023).
- Jonathan M. Baker, Casey Duckering, Alexander Hoover, and Frederic T. Chong. "Decomposing Quantum Generalized Toffoli with an Arbitrary Number of Ancilla." arXiv preprint arXiv:1904.01671 (2019).

Professional Experience

Meta PhD Student Internship at Meta, where I worked on query optimization for Meta's
Summer 2022 internal query language.

BMW Manufacturing Student Co-op working on data mining for the Research and Innovation Center at BMW.
Spring 2018

Teaching

- Cryptography, University of Chicago, Autumn 2021, 2020, 2019
- Computer Security, University of Chicago, Winter 2023, 2021, 2020
- Graph Theory, University of Chicago, Spring 2019
- Intro to Machine Learning, University of Chicago, Winter 2019
- Intro to Computer Science, University of Chicago, Autumn 2018
- Theoretical Computer Science Tutor, Rochester Institute of Technology, Spring 2016 - Fall 2017