

# Alexander (Alex) Hoover

ax@axhoover.com  
axhoover.com

## Research Interests:

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

## Education

**Rochester Institute of Technology**  
2018

BS in Computer Science and Applied Mathematics (double major)  
GPA: 3.86 / 4.0

**University of Chicago**  
2021

MS in Computer Science, Advisor: David Cash

**University of Chicago**  
2024 (expected)

PhD in Computer Science, Advisor: David Cash

## 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.

### arXiv Papers

- 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**  
Summer 2022

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

**BMW Manufacturing**  
Spring 2018

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

**Green Cloud Technologies**  
Summer 2015

Intern working with automation of common errors occurring on the servers. Incoming error alerts are filtered through my script that would solve simple, recurring issues.

## 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