# ERIC D. BRIGHAM

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## EDUCATION

**University of Minnesota, Minneapolis** *2022 - Present*
Ph.D. Candidate, Computer Science
M.S. Computer Science *2024*

**Waseda University, Tokyo** *2021*
Research Student, Fundamental Science and Engineering

**New College of Florida, Sarasota** *2015 - 2019*
B.A. Computer Science

## WORK EXPERIENCE

**Automation Engineer, GlobalFoundries** Summer 2025

- Developed widely used AWS-based tooling to extract, normalize, and visualize real-time dispatching data and disruptions in wafer production.
- Architected production trace models and implemented AWS lambda functions to enable downstream audits.
- Developed and integrated novel analytics into internal dashboards to monitor process-level disruptions in the manufacturing process.
- Conducted original research to abstract low-level dispatch logs into generalized waiting scenarios, enabling more informed and efficient dispatching decisions.

**Teaching Assistant, University of Minnesota** 2023-Present

- Served as head teaching assistant for Computer Security and Discrete Mathematics in the computer science department
- Planned, designed, and delivered weekly discussion sections for classes of up to 30 students

**Research Assistant, University of Minnesota** 2022-Present

- Developed novel traffic analysis methods to uncover and deanonymize users based on group communication patterns

**Assistant Language Teacher, Saga Prefectural Board of Education** 2019-2021

- Worked in Japanese public high schools teaching English to students of various levels
- Created daily original lesson plans, delivered lecture, and maintained order in classrooms of 40 students
- Prepared students for university entrance examination and English speech competition through individual, specialized training

## PUBLICATIONS

1. Eric Brigham and Nicholas Hopper. No safety in numbers: Traffic analysis of sealed-sender groups in signal. In *22nd Annual International Conference on Privacy, Security, and Trust*. IEEE, 2025. In Press

2. Xin Qi, Keping Yu, Toshio Sato, Kouichi Shibata, Eric Brigham, Takanori Tokutake, Rikiya Eguchi, Yusuke Maruyama, Zheng Wen, Kazuhiko Tamesue, et al. Ledger-based points transfer system in lpwan: From disaster management aspect. In *2021 International Conference on Information and Communication Technologies for Disaster Management (ICT-DM)*, pages 150–155. IEEE, 2021

3. Xin Qi, Keping Yu, Toshio Sato, Kouichi Shibata, Eric Brigham, Takanori Tokutake, Rikiya Eguchi, Yusuke Maruyama, Zheng Wen, Kazuhiko Tamesue, et al. Optimizing packet transmission for ledger-based points transfer system in lpwan: solutions, evaluation and standardization. In *2021 ITU Kaleidoscope: Connecting Physical and Virtual Worlds (ITU K)*, pages 1–8. IEEE, 2021

4. Francisco J Marmolejo-Cossío, Eric Brigham, Benjamin Sela, and Jonathan Katz. Competing (semi-) selfish miners in bitcoin. In *Proceedings of the 1st ACM Conference on Advances in Financial Technologies*, pages 89–109, 2019

5. Eric Brigham, John A Doucette, and Matthew Lepinski. A usage-based mechanism for securing systems via blockchains. In *2019 IEEE International Conference on Decentralized Applications and Infrastructures (DAPPCON)*, pages 49–58. IEEE, 2019

Total Citations: 35

## UNDERGRADUATE HONORS THESIS

*Blockchains: Secure Systems, Distributed DNS, Attack Vectors, Multiple Selfish Miners*
This thesis consists of two distinct parts. The first contains a high level design for incentive compatible distributed DNS atop blockchain. The second provides an overview of subversive mining tactics, as well as game theoretic extension of the selfish miner problem into two player and N-player settings.

## RELEVANT COURSES

### Mathematics

Calculus I, II, III, Linear Algebra, Linear Programming, Theoretical Cryptography, Cryptanalysis, Modern Cryptography, Analytic Number Theory, Graph Theory, Error Correcting Codes, Data Science I,II

### Computer Science

Algorithms and Data Structures, Randomized Algorithms, Software Engineering, Computer Networks, Data Mining and Machine Learning, Computer Security, Operating Systems, Distributed Systems

## SKILLS AND INTERESTS

### Languages

`Computer` – Python, C++, Solidity, Go, Java, R, LaTeX, SQL

*Natural* – English, Japanese

### Technologies

Amazon Web Services, APF, Unix-based and Windows operating systems

### Soft Skills

Research, Technical Writing, Presenting and Public Speaking, Teaching, Agile Development

### Interests

Blockchain, Bitcoin/PoW Mining, Cryptocurrency, Game Theory, Computer and Network Security, Table Tennis