Please see https://itscolby.com/cv for the most detailed version of my CV.

About Me

I am obsessed with abstractions and certainty. Naturally, this leads me to love pure mathematics and formal logic. And because of my strong background in various areas of computer science (cryptography and systems/software architecture in particular), I've landed in the field of programming language theory, more specifically 'applied type theory'.

Education

1. Enrolled | A.B. in Computer Science at Brown University | 2019
2. Gap Year | 2021
3. Graduated | A.B. in Computer Science at Brown University | 2024
4. Enrolled | M.S. in Computer Science at Brown University | 2025

Industry Experience

Product Manager at Subspace Labs

Full-Time | 2023 - 2024 | 1 year

- I designed, spec'ed, and managed the development of 5 POCs, along with 2 MVPs.
- Designed an access layer for a blockchain-based file storage system, achieving enhanced performance and strengthened privacy through tailored protocols.
- Designed a new identity scheme, leveraging proof-of-personhood, augmented TLS sessions with MPC and ZKP, and blockchain-based verified credentials.
- Formalized security properties for the variations of proof-of-personhood.

Lead Architect at Hence Labs

Full-Time | 2022 | 6 months

- I collaboratively designed the architecture of an entire multi-chain network, produced over 100 pages of specs, and managed the development from concept to MVP.
- Meticulosuly spec'ed novel leader and leaderless consensus algorithms, hot and cold state management, message-passing, and much more—all with cutting edge industry standards.
- Collaborated on the design of the network topology, committee selection algorithm, and consensus protocols.
- Served as the face and voice of an 8 minute professionally produced marketing video.

Technical Consultant at Hence Labs

Part-Time | 2022 | 3 months

- Informed the design of a multi-chain network and was promoted to a lead architect role.

- Contrasted the network economics, mechanism design, and execution environments of every major blockchain.

Product Owner at MakerDAO

Full-Time | 2021 - 2023 | 1 year and 2 months

- Built and relased version 1 of the platform; it was then shortly acquired and repurposed by the operations-focused company Powerhouse.
- Development was always ahead of schedule, due to my ability to limit 'deleted features', refactors, and other technical debt.

Technical Consultant at MakerDAO

Part-Time | 2021 | 3 months

- Designed, developed, and benchmarked an on-chain POC for range polling that mitigated tactical voting.
- Researched and benchmarked the various range polling protocols and defined various attacks against each one.

Academia Experience

Teaching

- 2024 Spring | Applied Cryptography
- 2023 Spring | The Basics of Cryptographic Systems
- 2021 Fall | Deep Learning
- 2021 Summer | Blockchains & Cryptocurrencies
- 2021 Spring | Modern Web and Mobile Applications

Research

- 2023 Spring | Optimizing Partially Blind Signatures
- 2021 Fall | Slippage in Automated Market Makers
- 2021 Spring | Stack Canaries in Multithreaded Programs
- 2020 - 2021 | Distributed Sorting with Big Data

Relevant Coursework

- (Expected) 2026 Spring | (Audit) [Graduate] Analytic Number Theory
- (Expected) 2026 Spring | (Audit) [Graduate] Algebraic Geometry
- (Expected) 2026 Spring | Logic for Systems
- 2025 Fall | (Audit) [Graduate] Algebra
- 2025 Fall | (Audit) [Graduate] Algebraic Number Theory

- 2025 Fall | (Audit) [Graduate] Algebraic Topology
- 2025 Fall | Formal Verification
- 2025 Fall | Compilers
- 2023 Spring | Operating Systems
- 2023 Spring | Applied Cryptography
- 2021 Spring | [Graduate] Topics in Software Security
- 2021 Spring | Distributed Systems
- 2021 Spring | Computer Systems Security
- 2020 Fall | Artificial Intelligence
- 2020 Fall | Deep Learning
- 2020 Fall | Software Security Exploitation
- 2020 Spring | Introduction to Software Engineering
- 2020 Spring | Modern Web & Mobile Applications
- 2019 Fall | Linear Algebra
- 2019 Fall | Mathematical Logic
- 2019 Fall | Accelerated Introduction to Computer Science

Personal Projects

Professional Break: Pure Mathematics

More than Full-Time | 2024 - 2025 | 10 months

- Left my current employment in order to study pure mathematics.
- Alongside annoyingly teaching my friends math, I used open-source lectures, textbooks, blogs, and wikipedia pages to greatly increase my familiarity with pure mathematics.
- Initialy studied... abstract algebra, commutative algebra, and algebraic number theory.
- Then studied... point-set topology, algebraic topology, and knot theory.
- Then studied... measure theory and analytic number theory
- Then studied... category theory, universal algebra, proof theory, reverse mathematics, model theory, set theory, type theories, homotopy type theory, and modal logics.
- Then studied... non-euclidean geometries and geometric algebra.

Music Theory, Cognition, and Pyschology

Part-Time | 2023 - 2024 | 2 months

- Studied music theory, orchestration, and composition in order to inform me while developing my own theory of romantic-era classical music.
- Developed a formalization of mental structures involved in knowledge: concepts, definitions, hierarchies, and all the variations of each of these.
- Developed an axiomatic approach to motivational psychology, and more broadly speaking, the theory of life's purpose.

Theory of Product Development

Part-Time | 2022 | 2 months

- I wanted to compile everything I learned about product development in industry into a a systematic

way of developing products.