Christopher Jeong
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Education

Brown University Sep. 2022 – May 2026
Computer Science (BS), Mathematics (BS) *Providence, RI*

- **GPA: 3.96/4.0**
- Computer Science Coursework: **Data Structures and Algorithms**, **Operating Systems (Graduate)**, **Deep Learning**, **Computer Security**, **Computer Networks**, **Applied Cryptography**, **Compilers**, **Blockchains & Cryptocurrencies**, Advanced Probabilistic Algorithms (Graduate), Design and Analysis of Algorithms, Object-Oriented Programming
- Mathematics Coursework: **Statistics I + II**, **Linear Algebra**, **Cryptography**, **Optimization**, Galois Theory + Representation Theory, Abstract Algebra, Real Analysis I + II, Multivariable Calculus, Discrete Math

Experience

Undergraduate Research Assistant Jan. 2025 –
Brown University Department of Computer Science *Providence, RI*

- Evaluating the theory and application of **anonymous credentials**, **digital cash**, and **fully homomorphic encryption** with the Brown University Theoretical Computer Science group, constructing novel extensions upon **message authentication codes** and **keyed-verifcation credentials.**
- Engineering implementations of the μBBS and μCMZ protocols in **Rust** for presentation at the Theory of Cryptography conference.
- Constructed a **Zero-Knowledge Proof** crate in **Rust** allowing for non-interactive zero-knowledge proofs of classical discrete logarithms as well as representations of discrete logarithms with respect to the Curve25519 group.

Software Engineer Intern Jun. 2024 – Aug. 2024
JPMorgan Chase & Co. *Wilmington, DE*

- Developed an internal **React/Java/Spring Boot** project management tool built on **AWS** tracking status of teams in all lines of business as well as agility metrics and internal mobility opportunities for **1,100 teams** and **35,000** employees.
- Engineered and maintained **RESTful API**s in order to better coordinate API calls between in-house microservices within a **Java** environment. Reworked API calls to coordinate with the team's shift from **Angular** and a private cloud environment to **React** and **AWS**, ensuring consistency in the back-end during the transition of front-end frameworks.
- Created a **Kafka data pipeline** aggregating data from Jira to derive story progress that provides employees with real-time analyses of Jira story progress utilizing an in-house **Small-Language Model**.
- Architected a robust testing framework consisting of unit tests, component tests, and performance tests from the ground up using **JUnit** and **Jest**, increasing code coverage to **80%**.

Undergraduate Teaching Assistant Jun. 2024 –
Brown University *Providence, RI*

- Selected as an undergraduate teaching assistant for Brown University's courses in Operating Systems with Lab, Applied Cryptography, Abstract Algebra, and Cybersecurity Ethics.
- Debugged and stress tested multithreaded **C/x86_64** programs with **10,000+** lines of code, ensuring a seamless fit between file system, virtual memory, threads, and processes, and ensured that the operating system could handle high-stress situations such as forkbomb attacks and full consumption of disk space.
- Implemented a threads package supporting multiprocessor programming, redesigning synchronization primitives such as mutexes and spinlocks as well as building a CPU scheduler.
- Constructed a project introducing students to zero-knowledge proofs through anonymous voting in **C++**, ensuring proofs of correctness in the assigned protocol and constructing a networking package for ease of use.

Projects

TCP/IP Stack | *Go, Networking, Wireshark* Sep 2024 - Dec 2024

- Designed and implemented a **TCP/IP** stack in Go that supports routing with the RIP protocol as well as TCP Packet reordering. Developed an API for hosts and routers to send messages and print network status.

Multiple Candidate Voting Protocol | *C++, CryptoPP, Cryptography, SQL* Apr 2024 – May 2024

- Formulated a heavily mathematical protocol in **C++** that allows voters to anonymously vote for candidates using zero-knowledge proofs, ensuring votes and user information remain secure during network communication.

Weenix | *C, x86_64, Unix, Python* Jan 2024 – Apr 2024

- Engineered a Unix-based operating system kernel from scratch that can run **C** programs. Implemented processes, threads, mutexes, virtual memory, physical memory, page tables, system calls and disk management.

Technical Skills

Languages: Java, Python, C/C++, C#, SQL, MySQL, Go, JavaScript, TypeScript, HTML/CSS, OCaml, CUDA
Technologies: React.js, Node.js, NestJS, Kafka, Spring Boot, DropWizard, Jenkins, Maven, AWS, Spark, Memcached, .NET
Developer Tools: Git, Docker, VS Code, Postman, GitHub, BitBucket, Swagger, Redis, Zookeeper