

Bokai Bi

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EDUCATION

Brown University

Providence, RI

Bachelor of Science in Computer Science

September 2022 – May 2026 (expected)

- **GPA:** 4.0/4.0
- **Courses:** Data Structures and Algorithms, Operating Systems, Computer Networks, Graduate Networks Seminar, Algorithmic Game Theory, Compilers and Program Analysis, Computer Systems, Applied Cryptography, Deep Learning, Discrete Structures and Probability, Statistical Inference
- **Teaching Assistant** for: High-Performance Networking, Computer Systems, Data Structures and Algorithms

EXPERIENCE

Stripe

May 2025 - August 2025

Incoming Software Engineering Intern

Seattle, WA

- Interning at Stripe's Infrastructure and Data Engineering Organization using **Go**, **Python**, and **Java**.

JPMorgan Chase & Co.

June 2024 - August 2024

Software Engineering Intern

Wilmington, DE

- Refactored **high-performance** customer call prediction rules that process **1 billion entries per day** and enhance the experience of **all Chase customers in the United States**.
- Migrated service from monolithic **Amazon Elastic MapReduce distributed computing** cluster to serverless **AWS Glue Job microservices** to reduce data latency and enable greater modularization using **Python**.
- Set up **real-time model monitoring system** powered by **distributed processing in production environment** that monitors **data drift** and model quality.
- Leveraged cloud computing technologies including **Apache Spark**, **AWS Glue**, **AWS Lambda**, and **DynamoDB**.

Brown University ETOS Research Group

May 2023 – September 2023

Undergraduate Research Assistant

Providence, RI

- Developed Quicksand, a **scalable, high-performance distributed computing** cloud infrastructure that optimizes data center resource utilization by breaking resource consumption into small units that can use stranded resources.
- Created performance-critical multi-threaded high-volume metrication in an optimized code base with minimal performance impact (**1 nanosecond per operation** for local calls, **no significant impact** for remote calls).
- Built algorithms that optimized worst-case system performance by **126x** using collected information.
- Utilized modern C++ 23 features such as variadic templates, optionals, template templates, spanstreams, etc.

Brown University Computer Science Department

April 2023 – Present

SPOC System Administrator

Providence, RI

- Managed **800+ Linux** departmental machines for **1000+** students and faculty in the computer science department with root privileges. Troubleshooted for users having technical difficulties with departmental systems.
- Maintained **SSH**, **FTP**, **VPN**, and other department services as a SPOC (Systems, Programmer, Operator, Consultant).

Brown-RISD Game Developers

September 2022 – Present

Executive Board, Lead Programmer, Product Manager

Providence, RI

- Led teams of **20+** people to develop **200+ features and systems** on 5 different games using **C#** and **Unity**.
- Managed logistics for **100+ people club** for recruiting, advertising, and event planning.

PROJECTS

eBPF Congestion Control | C++, Rust, Python

September 2024 - December 2024

- Investigated the performance of **network congestion control algorithms** implemented in **kernel space** using **eBPF**, running **high-performance JIT-compiled** programs while maintaining safety using **verification** and **sandboxing**.
- Implemented sophisticated industry-level congestion control algorithms, such as Google's **BBR**, using eBPF.
- **Benchmarked** the performance difference of traditional CCAs (**TCP Reno**, **Cubic**) between native Linux kernel implementation and their eBPF counterparts.

TCP/IP | Golang

October 2023 - December 2023

- Built end-to-end compatible **TCP/IP Protocol** from scratch in **Go** according to **RFC standards**.
- The IP Stack implemented **IP forwarding**, **route finding**, and **RIP routing**. The TCP Stack implemented **transmission control**, **out-of-order packets handling**, **sliding window**, **retransmission**, and **2-way connection teardown**.

TECHNICAL SKILLS

Programming Languages: C/C++, Python, Golang, Rust, C#, Java, SQL, Bash, OCaml, HTML/CSS, JavaScript

Skills: Data Structures and Algorithms, Distributed Computing, Multi-threaded programming, Computer Networking, gRPC, Machine Learning, Functional Programming, Unit Testing, Chaos Testing, Agile Development, Databases, Game Theory, Statistical Inference, Probability, CI/CD, DevOps, Optimization, Teamwork and Communication, Documentation

Technologies: AWS, Git, Linux, Docker, eBPF, Spark, DynamoDB, MongoDB, Tensorflow, Numpy, Jenkins

Hobbies: Game Development, Self-hosting, Music Arranging, Networks and Cryptography, Beat Saber (ranked world #884)