Bowen Cheng

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Education

Northwestern University — Evanston, IL
M.S. in Computer Science and B.S. in Computer Science, GPA: 3.98/4.0 — *Expected: June 2027*

Coursework: Distributed Systems, OS, Networking, Databases, ML, Computer Security Systems, Probability, DSA

Experience

Medline Industries — Northfield, IL
Software Development Intern — *June 2025 - Present*

Aqualab — Evanston, IL
Undergraduate Research Assistant — *March 2025 - Present*

- Architected and deployed Splashv2, a fully reproducible, config-driven traceroute ingestion pipeline with Dagster, Docker Compose, ClickHouse, and Grafana, reducing researcher setup time from days to under one hour
- Enabled scalable ingestion, processing, and annotation of 1.6M+ RIPE Atlas traceroutes with IPInfo enrichment
- Accelerated traceroute geolocation by 86% through multi-core parallelization and optimized data workflows

Climate Action Evanston — Evanston, IL
Full Stack Developer — *December 2024 - June 2025*

- Designed and implemented the database schema using Supabase to model and store environmental metrics
- Integrated the React frontend with a Node.js backend to enable dynamic rendering of data on public-facing webapp

Northwestern Institute on Complex Systems — Evanston, IL
Undergraduate Research Assistant — *December 2024 - June 2025*

- Engineered a low-latency LED control system in C to study coupled oscillators in firefly populations, integrating a laptop, Raspberry Pi, and addressable LEDs to enable precise, real-time dynamic lighting sequences
- Designed a data pipeline from laptop to Raspberry Pi via UDP over an Ethernet cable, achieving sub-5ms latency
- Developed simulations to replicate firefly flashing patterns, enabling experiments such as mirrored firefly behavior

GHY Impact Capital — Chicago, IL
Software Engineering Intern — *July 2024 - September 2024*

- Designed AI-powered chatbot using GPT models and Retrieval-Augmented Generation to answer customer FAQs
- Created an automated, AI-based version control summary system, simplifying workflows for software developers

Projects

Privacy Backplane Distributed System @ Prescience Lab | *Rust* — June 2025

- Built core daemon logic for Privacy Backplane Distributed System, enabling real-time policy enforcement and coordination across nodes running in trusted execution environments, supporting messaging and peer discovery
- Parsed UWB sensor data into (x, y, z) coordinates and broadcasted locations over libp2p for real-time user tracking
- Implemented event-driven messaging with custom structs to launch distributed DAG queries across peer nodes

Pokefantasia | *AWS, Docker, HTML/CSS, Javascript* — December 2024

- Built a full-stack web application with serverless backend architecture, enabling users to upload JPEG images for Pokémon type classification, type transformations, or style transformation, generating customized outputs
- Trained and deployed a custom Vision Transformer model on Google Colab to AWS for image classification
- Deployed API endpoints using AWS API Gateway to handle user requests, leveraging Lambda for distributed computation, S3 for image storage, RDS for managing user data, and ECR for dependency management

Technical Skills

Languages: Python, C, C++, Java, SQL, HTML/CSS, Racket, TypeScript, Rust, Go
Frameworks: React, Node.js, pandas, NumPy, Matplotlib, OpenCV, Tailwind CSS, Dagster
Developer Tools: Git, AWS, VS Code, GitHub Actions, Docker