# 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, Operating Systems, Networking, Databases, Machine Learning, Deep Learning, Microcontroller System Design, Computer Security Systems, Scalable Software Architectures, Probability, DSA

## EXPERIENCE

**Medline Industries**                                                                                          Northfield, IL
*Incoming Software Development Intern*                                                              *Starting June 2025*

**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