

# Hao Wang

3333 Forbes Avenue Unit 1174, PITTSBURGH, United States, 8484371602, haw129@pitt.edu

## EDUCATION

Aug 2021 — May 2025

Bachelor of Science in Computer Science, University of Pittsburgh

Pittsburgh, PA

## INTERNSHIPS

Jun 2024 — Aug 2024

Medical AI Intern, Artery Flow

- Engineered a **C/C++** preprocessing pipeline to convert **300+** CT/DSA/CTA/MRA scans into accurate 3D cerebrovascular models—custom vessel-segmentation algorithms achieved **95%** mesh fidelity and cut preprocessing time by **30%**.
- Developed an annotation toolkit to automate ROI extraction and metadata tagging for over **200+** brain-vessel cases, reducing manual labeling effort by **60%** and delivering consistent, production-ready training datasets.
- Integrated 3D models and annotated data into Artery Flow’s AI diagnostic platform, accelerating model training cycles by **25%** and boosting cerebrovascular anomaly detection accuracy by **15%**.

May 2023 — Aug 2023

Software Engineer Intern, DANDYKING

- Engineered robust back-end infrastructure using **Java** and **Spring Boot**, implementing **RESTful APIs** with **Spring Web MVC**. Achieved handling of **1000+** requests/second.
- Optimized data handling with **MyBatis**, **DynamoDB**, **Redis**, and **RabbitMQ**, ensuring real-time updates for inventory and transactions. Supported **10,000+** concurrent users during peak hours with efficient message queuing and event-driven architecture.

## PROJECTS

Treefficiency • Senior Capstone Project

- Architected and implemented a gamified virtual forest in **Flutter**, translating user actions (trivia & real-world tasks) into a four-stage tree-growth state machine; managed state with Provider to ensure **sub-100 ms UI updates** under heavy load.
- Engineered **Firestore**-backed persistence with offline sync and custom security rules, delivering a “My Forest” dashboard that tracked **1,000+** growth events across **200** pilot users—achieving **85%** weekly retention during beta.
- Built a real-time trivia leaderboard and Cloud Functions-driven daily challenge scheduler, driving a **40%** lift in weekly active users and tripling daily session starts over a four-week trial.

FortreeDB CLI

- Spearheaded the full database development lifecycle—conceptual design through implementation—for a **10-table, 3NF** schema modeling forests, species, volunteers, sensors, and measurements in an IoT forest-monitoring system.
- Designed **SQL** and **PL/pgSQL** routines for schema evolution and bulk data operations—commands like addaForest and assign Volunteer—using transaction-scoped DML to enforce referential integrity across **50 K+** records.
- Built a responsive **Java CLI** atop **JDBC** for real-time database interaction: executed complex queries over sensor data with **sub-200 ms** latency and enforced **ACID** compliance; integrated end-to-end Java + SQL tests into **GitHub Actions** for continuous validation.

Real-Time Chat Room Web App

- Built a **Flask**-backed **REST API** with **SQLAlchemy ORM** to manage users, chat rooms, and messages, ensuring **ACID compliance** and clean schema design.
- Developed a **JavaScript** front-end using **fetch/JSON** for **1s-interval** AJAX polling—only new messages fetched—to deliver a smooth real-time chat experience without “ghost” messages.
- Implemented user authentication, chat-room creation/deletion, and graceful handling of room deletions for in-room users, demonstrating attention to **UX** and fault tolerance.

## SKILLS

Programming Languages: C · C++ · Java · Python · JavaScript · SQL · Dart

Databases & Storage: PostgreSQL · MySQL ·

Frameworks & Libraries: Spring  
Boot · Flask · React · Flutter ·  
Provider · Node.js

MongoDB · Firebase (Firestore)  
· DynamoDB · Redis

Testing & QA: JUnit · pytest ·  
Selenium · Valgrind