Hongzheng Li

(530)564-2391 | hongzheng@cmu.edu | Linkedin | GitHub | hongzhengli.com

EDUCATION

Carnegie Mellon University   Pittsburgh, PA
Master of Science in Information Networking   *January 2026 - May 2027*

University of Wisconsin − Madison   Madison, WI
Bachelor of Science in Computer Science; GPA: 4.0/4.0   *September 2021 - December 2025*

EXPERIENCE

CS 571 Peer Mentor   September 2025 – Present
University of Wisconsin–Madison, Dept. of Computer Sciences   *Madison, WI*
- Hold weekly office hours for a class of 300+ students, coaching on programming assignments and projects
- Collaborate with course staff in a weekly meeting to triage common issues and improve course materials and FAQs

Full-Stack Developer   June 2025 – August 2025
UW-Madison CDIS Summer AI Lab   *Madison, WI*
- Designed and developed a one-stop, chat-based travel planner using OpenAI intent extraction and real-time APIs to generate personalized, credible itineraries
- Integrated flight, hotel, and venue data (SerpAPI, Amadeus, Google Maps) into standardized booking cards
- Led production deployment and automated **CI/CD**, standardized the development environment and code style (**Prettier**, **ESLint**, **Devcontainer**, **pre-commit**), enhancing team collaboration and code quality

Operating System Research Intern   April 2024 – February 2025
University of California, Merced   *Merced, CA*
- Contribute to the development of a performance optimization tool for multi-node systems using **C++**
- Modify **Linux kernel code** to simulate a memory-tiered architecture on a multi-node machine
- Utilize Linux Performance Tools, including **Perf** and **VTune**, to monitor and analyze system performance

PROJECTS

Non-Linear Chatbot | *React, Node.js (Express), TypeScript, PostgreSQL, Prisma* | View Demo   August 2025
- Designed and implemented a tree-based non-linear chat system with mind-map–like visualization (**ReactFlow + Dagre**), enabling users to branch, backtrack, and intuitively navigate complex conversations
- Built a full-stack app with **Wasp**, **PostgreSQL**, and **RESTful APIs**, supporting authentication, persistence, and real-time streaming responses
- Implemented comprehensive security layer including **JWT authentication**, **rate limiting**, **CORS protection**, and **XSS prevention** with multi-layered validation
- Deployed to production with automated **CI/CD (Docker, GitHub Actions)** for reliability

BusTub DBMS | *C++, CMake, Ninja, Git*   May 2025
- Built core DBMS infrastructure (**Buffer Pool Manager**, **B+Tree index**) in **C++17** as part of a large-scale, **30,000-line** codebase
- Designed and implemented thread-safe memory management, **LRU-K eviction** and concurrent B+Tree indexing
- Developed advanced concurrency controls (**RAII**, **page guards**, **latch crabbing**) to support high-performance multi-threaded access
- Optimized buffer pool manager with **lock-free queues** and **asynchronous disk I/O**, achieving up to **8300 QPS** (scan) and **5700 QPS** (get) at **1 ms** disk latency

GOPHER Delivery Simulation System | *C++, Typescript, Docker, Git* | View Demo   May 2024
- Engineered a multi-entity simulator in **C++**, leveraging advanced object-oriented design patterns to enable extensible behaviors and real-time notifications between backend and **TypeScript** frontend
- Documented codebase with **Doxygen** and developed unit tests with **Google Test** to ensure code quality
- Containerized the environment with **Docker** for uniform builds and deployments
- Employed **CI/CD** pipelines to automate testing and deployment
- Practiced **Scrum** and used **Git** for collaborative development and version control

TECHNICAL SKILLS

Programming Languages: C, C++, Python, JavaScript, Java, HTML, CSS
Tools: Git, GitHub Actions, Docker, CMake, GDB, UML, vcpkg, Vim, Figma, GTest, JUnit
Databases & Distributed Systems: PostgreSQL, Cassandra, BigQuery, HDFS, Spark, Kafka
Frameworks: React, React Native, Intel MKL, gRPC, Flask, OpenMP, pandas, NumPy