Henry Wang

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Education

University of Waterloo Sept. 2024 - Apr. 2029 (Expected)
Bachelor of Software Engineering (BSE)

Technical Skills

Languages: C, C++, Java, Python, JavaScript, TypeScript, SQL
Developer Tools: Git, Docker, Jira, AWS, LaTeX
Frameworks & Libraries: TensorFlow, PyTorch, NumPy, React, Node.js, Next.js

Experience

Software Engineer Intern Jan. 2026 – Apr. 2026
Fish Audio *San Francisco, CA*

- Built an AI video generation workflow that takes users from template selection to script generation and TTS audio synthesis w/ a populated timeline, using React/Next.js,TypeScript, and Zustand
- Integrated text-to-speech API with voice selection and batch processing, displaying real-time progress as audio generates for each script line
- Implemented script editing interface with line reordering, character assignment, and regeneration, giving users control over AI-generated content before rendering

Full Stack Software Engineer Intern Apr. 2025 – Aug. 2025
NationGraph *San Francisco, CA*

- Delivered scalable full-stack features using React, FastAPI, and PostgreSQL, improving API latency and UX.
- Increased PostgreSQL query performance by 38% through join optimization, B-tree indexing, and Redis caching, reducing analytics query latency.
- Built a large-scale ML pipeline for entity resolution, normalizing 600M+ vendor names using TF-IDF embeddings and supervised classification models.

Projects

hang.ai: AI-Powered Study Platform | *Python, Next.js, PostgreSQL, PyTorch, Docker* Aug. 2025 – Present

- Designed a 7-service microservice architecture using FastAPI, Kong API, PostgreSQL, Redis, and RabbitMQ.
- Implemented symbolic math engine in Python supporting differentiation, integration, and equation solving with exact rational arithmetic; renders LaTeX via KaTeX.
- Built voice-to-LaTeX pipeline using Whisper and FST-based post-processing via Celery workers; implemented SuperMemo SM-2 spaced repetition for flashcards.

NFL Game Prediction System | *Python, PyTorch, React* | Oct. 2025 – Dec. 2025

- Built ensemble prediction system using XGBoost, LightGBM, CatBoost, and neural networks with weighted stacking, achieving 89% accuracy and 0.95 ROC-AUC on NFL game outcomes.
- Scraped and processed data from Pro Football Reference, NFL.com, and Open-Meteo API using BeautifulSoup and pandas to engineer 50+ features including EPA metrics and player matchups.
- Deployed FastAPI backend with PostgreSQL, Redis caching, and Docker Compose; built Next.js dashboard visualizing predictions with Recharts.

Neural Network Framework | *C++, React, FastAPI* | Nov. 2025 – Present

- Implemented PyTorch-like framework in C++ (9,500 LOC) with tape-based autodiff, 40+ differentiable ops, and custom tensor broadcasting.
- Optimized matrix operations using ARM NEON/x86 AVX SIMD and OpenMP parallelization with 32x32 cache-blocked tiling for matmul.
- Created a FastAPI + React training platform for natural language model design with auto C++ code generation.

Awards

National Champion for Hypatia Math Contest (1/5627)
Score of 124.5 on AMC12 2024 (Top 5% out of 140,000 participants)
Bronze Medal on the CLMC