

Henry Wang

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TECHNICAL SKILLS

Languages: C, C++, Java, Python, JavaScript, SQL, HTML/CSS
Developer Tools: Git, Docker, PyCharm, Vim, IntelliJ, Eclipse, LaTeX
Frameworks & Libraries: TensorFlow, PyTorch, NumPy, Matplotlib, SDL, React, Node.js, Express.js
Machine Learning & AI: Natural Language Processing (NLP), LLM Integration, Classification Models

PROJECTS

- 3D Software Renderer** | C, SDL2 | 🌐 Dec. 2023 – Present
- Built a **software renderer** for real-time generation and interactive user navigation around **3D objects**.
 - Implemented advanced features including **mesh rendering**, **smooth shading** and **orthogonal projection**.
 - Developed supporting data structures from scratch (e.g., **AVL Trees**) to support the run-time efficiency of complex algorithms (e.g., **Bentley-Ottman algorithm**).
- Retro Video Game Console** | Python | 🌐 Oct. 2024 - Dec. 2024
- Collaborated in 5-member team to develop a retro-style **8-bit game console** from the ground up.
 - Implemented a **hardware abstraction layer** to enable seamless communication between software and a custom **16x12 RGB display**, keyboard input, and a 3-channel, 1-bit audio system.
 - Deployed 3 fully functional retro games: Tetris, Snake, and Sokoban to showcase the console's capabilities.
- Neural Network Framework** | C++ | 🌐 Aug. 2024 – Nov. 2024
- Developed a **C++ machine learning library** for building and training custom neural networks.
 - Leveraged **templates** and **function pointers** to allow full user customization over loss functions, activation functions, and network architecture.
 - Validated the library with a proof-of-concept model using the **MNIST dataset**, achieving **98.2% accuracy** in classifying handwritten digits.

EXPERIENCE

- Software Engineer Intern** Apr. 2025 – Aug. 2025
NationGraph San Francisco, CA
- Developed full-stack features, contributing to UI components and backend services using **Python, React, and PostgreSQL**.
 - Optimized database queries across the platform by **up to 38%**, improving user experience and functionality.
 - Designed and developed a **ML pipeline** to classify and normalize **600M+** vendor names, improving large-scale data consistency while accelerating analytic workflows.
- Autonomous Software Developer** Oct. 2024 – Present
WATonomous Waterloo, ON
- Developing core autonomy software for a Rover, improving self-directed navigation and real-time object detection.
 - Implementing **YOLO-based** object detection and **SLAM algorithms** to achieve real-time environmental mapping for completely autonomous navigation.
- Teaching Assistant** Sept. 2022 - March 2024
TT Math School Markham, ON
- Led a group of 4 TAs in facilitating instructions for 120 students in advanced contest mathematics courses.
 - Thoroughly assessed problem sets and provided feedback on contest style mathematics for multiple classes.

EDUCATION

- University of Waterloo** Sept. 2024 - Apr. 2029 (Expected)
Bachelor of Software Engineering (BSE) *Cumulative Average: 97% (4.00 GPA)*

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