Jason Wang

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EDUCATION

University of Waterloo Ontario, Canada

Candidate for BASc in Environmental Engineering September 2024 – April 2029 (Expected)

Courses: Computational Methods, Electrical Circuits, Environmental Engineering Concepts, Technical Communication

SKILLS

Languages/Frameworks: Java, Python, C++, C, Assembly, HTML, CSS, Javascript, C#, MatLab, Swift, React, ROS2, PyTorch, Docker

Applications/Tools: Git, EAGLE, Solid Edge, SolidWorks, AutoCAD, Figma, Arduino, PCB manufacturing, Power tools, Surveying

EXPERIENCE

Mechanical Designer – ACE Manufacturing January 2025 – May 2025

- Achieved a **120%** increase in powder finishing cycle times by designing an automated conveyor system using **AutoCAD**
- Minimized construction times by **85%** by enhancing drawing visualization for **20+** designs using **SolidWorks** and **AutoCAD 3D**
- Led a wastewater treatment project by engineering **20+ feet long** customizable mixing tank systems with **AutoCAD** and managing respective fabrications through shop collaboration and material cost analysis, to reduce overall expenses by **60%**
- Manufactured **300+** components for paint finishing and industrial chemical treatment systems by operating various power tools

Mathematics Teaching Assistant – Saint Joseph Secondary School February 2024 – June 2024

- Delivered the Grade 10 Math curriculum with a high school teacher to a full class of **30+** students by routinely creating thorough lesson plans and assignments with **Microsoft Suites**, effectively increasing many students' grades by **~5%**
- Hosted **20+ hours** of test/exam prep and tutor sessions outside school by creating review documents of self-created questions, solutions, an drops using many **Google Workspace** features while frequently taking up homework and grading assignments

Lead Programmer – School FRC Robotics Team September 2021 – June 2024

- Architected real-time computer vision systems that improved terrain and obstacle tracking times by **80%** by integrating a **TensorFlow** model on a **Raspberry Pi** along with a **70%** successful grid that finds reflective tape through **RGB/HSV** filtration
- Developed joystick and autonomous controls with sensory data using **Java**, to enhance maneuverability and cycle times by **70%**
- Designed shooter and climber systems with **Solid Edge,** precision tools, and electrical devices, to boost scoring accuracy by **60%**

PROJECTS

LIDAR Navigation Autonomous Robot – 2025 Toyota Innovation Challenge Finalist May 2025

- Developed **C++ ROS2** nodes to convert **LIDAR** data into a **2D costmap** with **95%** accuracy for obstacle detection and localization
- Generated a real-time **world model** from the costmap and odometry data to significantly enhance navigation efficiency by **75%**
- Implemented the **A*** algorithm to compute obstacle free paths through the mapped environment to reduce cycle times by **60%**
- Applied **Pure Pursuit** algorithm to follow planned trajectories to optimize smooth differential drive control during navigation

Nocturna: Real-Time Danger Detector – Hack Canada Submission February 2025

- Architected a **FastAPI** backend that detects objects within a USB camera's feeds using a YOLOv8 model with **90%** accuracy
- Constructed a **FeathersJS** backend to host an endpoint service that calls and handles the Gemini API for danger classification
- Engineered a **React Native** frontend mobile app that polls the backend every **5** seconds to display processed and labelled images
- Designed the full-stack project's infrared camera mounting headwear model using **SolidWorks** for classifying night-time objects

SootheAI: Mental Health & Financial Wellness ChatBot – GeeseHacks Submission January 2025

- Constructed a **Node.js** backend that enables dynamic real-time conversations with clients using user inputs in a chatbot
- Integrated a TeejLab sentiment analysis API to be called and handled by an endpoint service hosted within a **Flask** backend
- Hosted the chatbot on a frontend website using **Python** to expand the user base and deliver comprehensive product overviews
- Replicated the mobile chatbot with Voiceflow and **Figma** to create real-time simulations and optimize GUI designs

Rotation Direction Tracker – Computer Engineering Cumulative Project January 2024 – June 2024

- Designed a **PCB** in **EAGLE** for the **QRD1114 Optical Sensor** that efficiently **transmitted signals** for providing navigation assistance
- Utilized D flip flops to store memory and determine directionality with a **90%** success rate to output results via **color-coded LEDs**