Vince Liwongan

vasliwon@uwaterloo.ca | linkedin.com/in/vinceliwongan | github.com/Orbit-35

Technical Skills

Languages: Go, Python, C/C++, TypeScript, JavaScript, Java, SQL
Frameworks: Vue 3, React, Node.js/Express, Flask, ROS2, REST APIs
Tools: Git, Docker, PostgreSQL, GCP (Cloud Run, Compute Engine, Cloud Tasks), GitLab CI, SVN, CARLA, Foxglove
Hardware: Altium Designer (scripting), TI C2000/CCS, Jetson Orin Nano, CAN bus, Arduino, Fusion 360

Experience

Enedym Inc. Sep 2026 – Dec 2026
Full Stack Developer Co-op | Go, PostgreSQL, Vue 3, TypeScript, GCP *Hamilton, ON*

- Leading an in-house replacement for **Altium 365**, the company's paid cloud tool for PCB design storage, review and parts libraries, built on the internal PULSE platform and taken from research to a **working pilot with hardware engineers**
- Designed and shipped a **Go service on GCP** (Cloud Run, Cloud Tasks) that watches the SVN design server and automatically sends each engineer's design save to PULSE for review
- Built an **Altium Designer add-in** and installer deployed on engineers' PCs, adding a one-click "Save for Review" button that generates the review PDF and commits the design
- Migrated **2,000 parts and 12,000 revisions** from Altium 365 into PostgreSQL, cut import memory from **1.1 GB to 300 MB**, and scripted the move of about 300 design projects into SVN
- Extended the Vue 3/TypeScript review app with **3D PCB renders**, @mentions with email notifications, and a library view of all 2,000 parts
- Designing two AI design-review tools with the hardware team: a one-click connectivity check in Altium (unconnected nets, shorts) and a **Claude-powered schematic review** that runs on every saved design
- Took over the production test and flashing station for a motor drive controller board, building a **TI C2000 bootloader** and merging secure flashing (JTAG lock/unlock, encrypted firmware over CAN) into PULSE's firmware delivery

WATonomous Sep 2025 – Present
Software Developer, Student Design Team | C++, ROS2, Docker *Waterloo, ON*

- Tested and implemented control algorithms for the autonomous car, including **MPC** and **Adaptive Pure Pursuit**, in simulation using **CARLA**, **Foxglove**, and **ROS2**
- Found that CARLA's Ackermann steering attenuated commands quadratically ($\delta_{\text{eff}} \approx 0.555\,\delta_{\text{cmd}}^2$) by measuring commanded vs. actual steering angles, explaining controller under-steer in simulation
- Traced multi-layer localization failures across a Dockerized **ROS2** autonomy stack, isolating a missing map dependency and topic-remap mismatches as root cause to restore end-to-end vehicle control in simulation
- Tested and troubleshot systems for the movement and control of humanoid arm and shoulder motors using the **Jetson Orin Nano** developer kit and **CAN bus**

Projects

VEX Robotics Competitor | *Sir Winston Churchill High School* Sep 2022 – May 2025

- Utilized the engineering design process to conceptualize and implement robot designs, ranking first at the **VEX 2024 Robotics Alberta Provincial Championship** and qualifying for the **World Championships** in Dallas, Texas
- Authored a comprehensive award-winning engineering notebook for a general audience
- Coached sister teams and volunteered for over 150 hours to educate young children in various opportunities such as **Google's Girl Powered initiative**, and Western Mechatronics' interactive booth

Code Explainer Web App | *Python, Flask, REST APIs, HTML/CSS/JavaScript* Apr 2025

- Built a full-stack web application that accepts code input and returns AI-generated explanations using Claude API
- Designed/implemented **Python/Flask** backend with **RESTful endpoints** to handle client requests and communicate with AI APIs

Accomplishments

BoxBots Hackathon "Best Game" Track Nov 2025
Hackathon Win *Waterloo, ON*

- Created a **life-sized Skee-Ball arcade machine** out of cardboard and electronics that featured a functional timer, scoreboard, and ball collection system with an automatic door
- Configured **3 Arduinos** connected via **I2C** for accurate scorekeeping and timing

CHSAA Division 1 Swimming Sep 2022 – Feb 2025
School Swim Team *Calgary, AB*

- Won 10 medals in the City Championships; **8 Gold and 2 Silver**, and 3 consecutive school championships
- **Won MVP Swimmer in 2024**, and led the team in points in the 2023 and 2024 seasons

Education

University of Waterloo Waterloo, ON
Bachelor of Honours Mathematics, Co-op *Sep 2025 – May 2030*

- **Relevant coursework:** Data Structures, Data Abstraction (C), Optimization, Linear Algebra 2, Multivariable Calculus