# Amy Hu

📖 **University of Waterloo** 3B Computer Engineering

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## 🎓 Education

**University of Waterloo, Computer Engineering, Candidate of BASc**     Sep 2021 - Apr 2026

**Relevant Courses :** Computer Architecture, Computer Networks, Compilers, Real-Time Operating Systems, etc

## ☰ Skills

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|---|---|
| Softwares | Golang, C/C++, Java, C#, CMake, GDB, Linux, Python, HTML, CSS, JavaScript, TypeScript, SQL |
| Frameworks | AWS, gPRC, REST API, React, Node.js, Flask, Unity, PyTorch, Kafka, Airflow, Three.js |
| Others | Git, Docker, Kubernetes, Bazel, WebGL, OpenGL, MySQL, PostgreSQL, SQLite, Redis |

## 💼 Experience    Find more projects at : ⎘ trotyl.xyz/projects

**Software Engineering Intern (Infrastructure Team),** Mountain View, **Kodiak Robotics**    Jan 2025 - Present

> Developed a data pipeline in **C++** to extract real-time driverless data, calculate autonomous mileage, and ingest records into an **AWS Elasticsearch** cluster. Leveraged **React** based timelines and graphs for streamlined visualization and analysis.
> Designed and implemented multi-trailer 3D replay in **Three.js** and **WebGL**, applying trigonometry to accurately calculate positions with minimal data and diverse trailer dimensions.
> Utilized **OpenCV** to process and annotate video feeds with real-time autonomy state indicators, improving situational awareness.
> Created an **Apache Airflow** DAG that tags requesters in Slack upon log snippet creation, significantly reducing response times.
> Engineered a **CLI** tool for on-truck process management, improving operational efficiency and reducing downtime.

**Software Development Intern (Core Product Team),** Remote, **Adentro Inc**    May 2024 - Aug 2024

> Developed a **URL shortener** service in **Golang**, returning MD5-encoded hashes with a collision probability of less than 1 in 10,000.
> Created a **hook receiver** with a validator in **Golang** to handle HTTP requests from third-party webhooks, responsible for processing events such as email opens, clicks, and status updates, and converting these calls into a **Protobuf** format to write them into **Kafka**.
> Developed a **gRPC server** for managing account configurations, using in-memory **caching** for efficient data validation and retrieval.
> Utilized **Bazel**, **Terraform** and **WAF** to configure and deploy servers on **AWS**, and created **PostgreSQL** tables for data storage.

**Software Development Intern (Central Maxon App Team),** Waterloo, **Maxon Computer**    Sep 2023 - Dec 2023

> Developed a version-capturing mechanism in **C++** that triggers on installation/update events, enabling system changes analytics.
> Enhanced data accuracy by implementing configurable capture conditions (via macros, config files, and environmental variables).
> Created and executed **Google unit tests** for user identity management events.
> Addressed **GDPR** compliance concerns by fixing various data-sensitive bugs in analytic system, reinforcing user privacy protections.
> Streamlined version update processes with **Bash** and **Python** scripts, reducing manual overhead and minimizing errors.

**Front-End Development Intern,** North York, **Sparklease Inc.**    Jan 2023 - Apr 2023

> Developed vehicle detail and lease calculator using **RESTful API**, and **ASP.NET MVC**, incorporating payment algorithm.
> Improved website performance by over **60%** through optimizations such as Lazy Loading, code streamlining, and text compression.

**Web Development Intern,** Remote, **eButterfly**    May 2022 - Aug 2022

> Developed a log table with server-side pagination, filtering, and indexing using **React** and **Node.js** to ensure fast data retrieval.
> Led a team of 5 in a statistical display project, providing backend and environment setup assistance for **Python Flask** and **FastAPI**.

## 💻 Student Design Team

**Autonomy Team Lead,** Waterloo, **Waterloo Aerial Robotics Group**    Jan 2022 - May 2024

> Represented the team at the **2024 National Annual UAS Student Competition**, securing **1st place** in both phase 1 design paper and phase 2 flight assessment, as well as receiving the **Judge's Award**.
> Led a team of over 20 members in delivering a multi-processing computer vision system for UAVs to derive information from images, videos, and coordinate inputs, along with a ground-side GUI and drone telemetry system.
> Collected and trained a dataset of over 12,000 UAV landing pad images to develop a **YOLOv8**-based object detection model, achieving over **90% mAP**, and implemented a **deep neural network** in **TensorFlow** to identify 10 different object classes.