Grace Guo

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Education

University of Waterloo Sep 2021 – Apr 2026 (Expected)
Bachelor of Computer Science (Co-op) *Waterloo, ON*
Courses: Machine Learning, Artificial Intelligence, Networks, Operating Systems, Data Structure & Algorithms

Technical Skills

Languages: Python (Advanced), C/C++ (Intermediate), SQL, Java, JavaScript, R, MATLAB, Bash
Frameworks/Libraries: OpenCV, PyTorch, Numpy, SciPy, TensorRT, Matplotlib, Sklearn, Tensorflow, Flask, Next.js
Developer Tools/Other: Linux, CVAT, AWS (Amazon Web Services), ROS2, Docker, Git, MySQL Workbench

Experience

Software Engineer Intern Sep 2024 – Present
BotBuilt (YC W21) *Durham, NC*
- Automated QA inspection by converting video input to point clouds using **photogrammetry**, reducing manual inspection time by **10 hours/month**.
- Built a **C++ data pipeline** that generates point clouds, meshes and orthographic images from video stream.
- Accelerated preprocessing pipeline by **8x** through **GPU parallelization** and **multiprocessing**.
- Leveraged **SAM** and custom segmentation model to mask backgrounds in point clouds with **80%** accuracy.

Perception Intern Jan 2024 – Apr 2024
Industrial Next (YC W22) *San Francisco, CA*
- Used **Perspective-n-Point** (PnP) to **estimate the 3D pose** of gears, achieving **under 2mm error** throughout the entire perception pipeline. Adapted code for a **ROS2** node.
- Created and deployed a semi-automated **intrinsic** calibration application on the **Jetson** platform, streamlining the calibration process.
- Developed a **Flask-based service** with FiftyOne to dynamically visualize data annotations and integrated **webhooks** for **asynchronous** data retrieval.

Machine Learning Intern May 2023 – Aug 2023
Industrial Next (YC W22) *San Francisco, CA*
- Implemented **real-time** (**15 FPS**) system that detects packaging anomalies on manual lines, attaining $> 90\%$ **precision rates** and resulting in **$400K+** annual contract.
- Used **CUDA** and **TensorRT** to develop an optimized model inference engine, reducing model prediction time by **3x** and enabling **real-time** processing.
- Optimized the data pipeline with **AWS S3 triggers** and **Lambda** to automatically upload **100+ GB** of data from **S3 buckets** to annotation platforms for machine learning workflows.

Machine Vision Programmer Sep 2022 – Dec 2022
Neatco Engineering Services Inc. *Waterloo, ON*
- Developed object tracking algorithm using **Python** and **OpenCV** to track different types of plastics in clustered environments.
- Improved object state estimations by $>$ **30**% compared to previous implementations using **Kalman filtering**.
- Optimized PCB **semantic segmentation** model visualizer speeds by **>60%** using **multiprocessing** approaches.

Projects

Manga Translator
- Developed a browser extension using **Chrome Extension API** to translate Japanese manga, injecting **JavaScript** into active pages to fetch and apply translations.
- Built backend **Flask API** to manage image translation requests and deliver typeset results.
- Used **OpenCV** tp identify contours and **Tesseract OCR** text transcription.

Talking Rubber Ducky
- Built a code diagnosis tool using **transformer**-based **LLMs** (e.g., **LLaMA**) and **HuggingFace API**.
- Developed algorithm to extract traceback and folder structure for context, improving diagnostic accuracy.