

# Andrew Zaki

Portfolio

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## PROGRAMMING SKILLS

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- **Languages:** Python, C++/C#, Typescript, JavaScript, VB, SQL
- **Technologies:** Tensorflow, Flask, YOLO, .NET, React, AWS, Docker, Django

## EXPERIENCE

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- **Magna International** Aurora, ON  
Full Stack Software Developer Jan 2024 - Present
  - Built and deployed a **Python-based** robot vision monitoring system, becoming the 1st engineer on the team to introduce **computer vision & ML** into production workflows; designed real-time pipelines to classify robot states, and detect anomalies using **OpenCV & Scikit-learn**.
  - Trained and deployed **TensorFlow-based** real-time **object detection** models achieving **98%** accuracy, reducing manual sorting and enabling automated part classification.
  - Led **Full-Stack** development of a robotic sanding system, cutting part processing time by **30 seconds**.
  - Reduced data transfer latency between Robotic system by refactoring **C++ & Python Back-End** servers
  - Restructured **SQL** database schemas and indexes, and **refactored queries** to reduce execution time from **seconds to milliseconds**.
- **Magna International** Aurora, ON  
Software Developer Intern May 2023 - Dec 2023
  - Developed **Full-Stack** inspection cell, integrating a 3D scanner on a robotic arm to validate part geometries against **CAD** models, eliminating the need for manual measurements.
  - Designed a user-friendly **Front-End** for a collaborative robotic sanding system, simplifying task selection, **error handling**, and reducing operator training time.
  - Built **real-time** dashboards with **Grafana** and **Power BI**, displaying OEE, cycle time, and downtime on robotic cell UI's.
- **FCT** Oakville, ON  
Software Engineer Intern May 2022 - Dec 2022
  - Developed **C++** secure data transfer **API** for integration with large scale bank clients (**TD** and **RBC**).
  - Ensured Stability of **JavaScript** web app by implementing and maintaining comprehensive **unit tests**.
  - Managed **cross-functional** team project ensuring collaboration between developers, designers, and supervisors while tracking tasks and milestones.

## EDUCATION

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- **University of Waterloo** Waterloo, ON  
Bachelor of Computer Science Sep. 2018 – Aug. 2024

## PROJECTS

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- **Computer Vision Pick-and-Place System** Designed a robotic system leveraging **deep learning** and **3D image** processing to **detect defects**, and sort parts on the factory line, enhancing automation precision.
- **Robot Vision Monitoring System** Developed an **AI-powered** computer vision system using **OpenCV**, and **Scikit-learn** to analyze RGB camera feeds, classify robot motion, and **detect anomalies**, enhancing automation reliability.