

Zara Syed

+1 647 284 5350 zara.syed@uwaterloo.ca [linkedin.com/in/zarasyeduw](https://www.linkedin.com/in/zarasyeduw) [zarasyed.com](https://www.zarasyed.com)

SUMMARY

Enthusiastic, creative problem solver, with a figure-it-out mindset. Proficient in **Python, C/C++ , Matlab.**

EDUCATION

University of Waterloo

Candidate for BAsC, Honors Mechatronics Engineering

Expected Graduation: **August 2026**

Waterloo, ON

EXPERIENCE

Embedded Software Engineering Intern, High Voltage Systems

Tesla

September 2025 - December 2025

Palo Alto, CA

- **Developed SIL test plans** and test cases to validate **battery management system firmware** alignment with functional and safety specifications, ensuring **full requirements coverage**.
- Enhanced accuracy and reliability of simulation-based firmware validation by developing and implementing **high-fidelity C++** and **Python-based models of high-voltage component circuitry**, featuring configuration dependent parameterization and intuitive test-development interfaces.

Machine Learning Intern

Musashi AI

May 2025 - August 2025

Waterloo, ON

- Built a data re-purposing module that **reduced annotation cost and time by 5x**, accelerating model training.
- Developed a high-precision, millimeter-level **defect detection prototype** for automotive parts using **Python** and **3D point-cloud processing**, aligning technical design with customer requirements and delivering a **successful business demo**.

Base Software Engineering Intern

Magna Powertrain

September 2024 - December 2024

Troy, MI

- Enhanced vehicle software reliability by developing **automated anomaly detection** tool for **CAN traffic**, using **Python**, **RegEx**, and **CANalyzer** parsing millions of lines of diagnostic data in seconds.
- Revolutionized requirements traceability and achieved 100% audit readiness by **automating requirements linking of 4000 functions** across 10 million lines of C code using **Python, Clang, LLVM, RegEx**, and **Excel**.
- Automated **SIL** performance evaluation consolidation for customer updates, with 99% task completion time reduction, parsing 130+ HTML Unit Test reports using **Python, RegEx, Jenkins**, and **Excel** **saving 8-10 hours each release**.

Software and Controls Algorithms Intern

Magna Powertrain

Jan 2024 – Apr 2024

St. Valentine, Austria

- Designed and implemented **reinforcement learning algorithm** and reward-based optimization for **real-time deep learning motor control unit**, as potential replacement for PID control, using **Python, Matlab**, and **Simulink**.

Digital Signals Processing Algorithm Developer Intern

ON Semiconductor

Sep 2022 – Dec 2022

Waterloo, ON

- Developed **32-bit fixed-point firmware** functions using **low level C code** for **LPDSP32**, including signal windowing functions.
- **Optimized memory usage by 75% and cycle count by 45%** for **FFT** implementation by tracing **assembly instructions** and exploiting **chip architecture**, leveraging conditional compilation and cyclical addressing.