Jacob Kowalski

MASc Mechanical and Mechatronic Engineering – University of Waterloo

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Programming Languages: Advanced C++/C, MATLAB, Rust, and Python leaned through university classes. self-taught in JavaScript, PHP, HTML, MYSQL, and Git for version control

Technical Skills: Introduction to AI Computing, Programming for performance, use of VSCode, Keil uVision, STM32 and CCStudio for microcontrollers for embedded development. Extensive class projects regarding circuit design and the use of operation-amplifiers for signal filtering. AutoCAD, SOLIDWORKS, Fusion 360, Comsol

EDUCATION

UNIVERSITY OF WATERLOO   *Waterloo, ON*

MASc in Mechanical and Mechatronic Engineering   *Expected September 2026*

- Relevant Research: In Progress development of an active shearing and compression lymphedema treatment garment and the development of a soft-rigid robotic hand and arm. Focuses on robotics, pneumatic systems, and mechanical design.

BASc in Honours Mechatronics   *April 2024*

- Relevant Coursework: Fundamentals of Computational Intelligence, Programming for Performance, Autonomous Vehicles, Thermodynamics and Heat Transfer, Automatic Control Systems, Microprocessor Systems and Interfacing, Actuators and Power Electronics, Electromechanical Machine Design.

PROJECTS

A.L.P.H.A. Robotic Arm and Hand – Final Capstone Project   *September 2023 – April 2024*

- Involvement on a fully mechatronic project, with mechanical, software, and electrical aspects through all stages of the design process, leading mechanical design and system integration, and supporting firmware and motion tracking components.
- As a 5-person team received the Alumni Award for Future Impact among the engineering cohort for the design and implementation of a 6-DOF pneumatic soft robotic hand and arm seeking to automate Manual Lymphatic Drainage, a massage-based lymphedema treatment.

WORK EXPERIENCE

Molex *(Industrial Automation Branch)*   *Waterloo ON*

Embedded Firmware Engineer Co-op   *January – September 2023*

- Built a general-purpose hardware testing framework for use by the hardware development team with the goal of identifying flaws before handing the circuit boards off to the application team in C.
- The framework was a terminal based UART command line interface which provided a developer level access to tests for the I2C, UART, SPI, EEPROM, GPIO's, Flash and DDR interfaces.

Sheertex (Now SRTX) *("Resilient Pantyhose" company)*   *Montreal QC*

Manufacturing Engineering Student   *April – September 2022*

- Reduced the manual labor at that process of the factory floor by 25% through design, construction, and implementation of an automatic labeling system integrated in one of factory boxing machines. The system automated the process of applying mailer box labels to the product boxes.
- Applied Lean Management practices to identify areas of waste on the factory floor to determined processes that could be improved. Used findings to recommend modifications that reduced time waste.
- Worked extensively in Fusion 360 to create models for the entire mechanical assembly, and made engineering drawings for all necessary components following GD&T.

The Container Guy *(Shipping container modification company)*   *Saskatoon SK*

Website Development Team Lead/Project Manager   *January – December 2021*

- Selected and managed two team-members in the development of a web-based ERP system for inventory and sale management for The Container Guy locations across Western Canada.
- Developed a functional full stack system comprising of PHP, JavaScript, MySQL and HTML using CodeIgniter 4.