Zaid Hoda

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Education

University of Calgary September 2022 – April 2027
Bachelor of Science in Electrical Engineering, Minor in Mechatronics Engineering *GPA: 3.5/4.0*

Coursework: *Electric & Digital Circuits, Signals, Electronics, Computer Architecture, Digital Design, Mechatronics*
Awards: *Dean's List, Jason Lang Scholarship, SSE Summer Research Award*

Skills

Programming Languages: C/C++, Python, SystemVerilog, HTML/CSS, JavaScript
Software and Tools: Altium Designer, KiCad, LTSpice, Xilinx Vivado, Intel Quartus Prime, Linux, GitHub, ROS 2
Hardware: FPGAs, microcontrollers, oscilloscopes, multimeters, soldering
Concepts: PCB design, machine learning, data analysis, object-oriented programming

Experience

Schulich School of Engineering | ***Machine Learning Research Assistant*** January 2025 – present
- Exploring machine learning applications in finger prosthetics at the HERO lab under Dr. Junho Park.
- Developing a classification algorithm using forearm EMG data for identifying finger positions.

CalgaryToSpace | ***Electrical Subteam Member*** January 2024 – present
- Contributed to the design, assembly, and testing of **7+** circuit boards for Calgary's first student-made satellite, utilizing **Altium Designer** and **KiCad** for PCB design and implementing custom testing and troubleshooting procedures to ensure device safety and functionality.
- Developed an **Arduino** program in **C++** to interface a load tester for the solar panels used by the satellite, reducing testing time by approximately **90%**.
- Onboarded new members and provided training in Arduino/C++ programming and circuit board troubleshooting/testing, facilitating effective integration into the team and fostering skill development.

Schulich School of Engineering | ***Electrical Engineering Research Intern*** May 2024 – August 2024
- Worked on the development of a assistive humanoid robot for the City of Calgary under Dr. Henry Leung at the Autonomous Systems and Intelligent Sensing Laboratory.
- Implemented 7 custom **ROS 2** packages for real-time data processing using a Hokuyo UST-20XL laser scanner, enabling mapping and navigation functionality for the robot.
- Wrote **Arduino C++** code to interface an MPU6050 gyroscope/accelerometer with an Arduino ESP32 Wroom and developed a custom ROS 2 node for converting serial data to ROS 2 IMU messages.
- Diagnosed and troubleshooted network issues concerning the robot's laser scanner and its Ethernet interface.
- Administered **version control** and general organization by maintaining a **GitHub** repository for the project as well as technical documentation to ensure clarity and reproducibility for future users.

Schulich Ignite | ***Programming Mentor*** October 2023 – April 2024
- Mentored **20+** students on programming with Python through weekly online and in-person workshops.
- Yielded very positive feedback and self-reported improvements in students' programming abilities.

Projects

Outdoor Garbage Collection Robot January 2025 – present
- Serving as the project manager and technical architect for the development of an outdoor garbage collection robot.
- Overseeing the implementation of outdoor pathing algorithms, machine learning algorithms for garbage detection, electronics design for the robot's hardware, and 3D structural design.

Automated Solar Panel Array January 2024 – April 2024
- Worked with a team of five to develop an sun-tracking solar panel powered by an **AVR microcontroller**.
- Wrote **C** code to interface the servo-powered turning system and used **Fusion360** for 3D design. Contributed to technical reports and presentations, receiving excellent grades and feedback throughout.

Retro Game Console & Indoor Garden January 2023 – April 2023
- Collaborated with a team of four to design and build a retro video game console with a built-in reaction time game and F1-themed wheel, and a fully automated indoor garden with moisture and light sensors and a water pump.
- Wrote **Arduino C++** code and developed circuits to interface sensors, the water pump, and a gyroscope. Authored a comprehensive technical report on the design process of the console and received a grade of **100%**.