Marko Buha

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Education

Bachelor of Engineering | Mechatronics Engineering　　　　　　　　　　　Graduated Apr 2025
McMaster University | GPA: 3.9　　　　　　　　　　　　　　　　　　　　　　*Hamilton, ON*
- Relevant Coursework: C & Python Programming, C++ Data Structures & Algorithms, STM32 Embedded Systems, FPGAs, Signal Processing, Control Systems, Networks, RTOS, Electromagnetism

Skills

STM32 Microcontrollers, ROS, PLCs, Digital Logic, Circuitry, Computer Hardware, I2C, Multisim, Oscilloscopes, 3D Printing, Python, C, C++, C#, Verilog, Julia, MATLAB, Simulink, Git, Linux, pandas, Eigen, Django, UML, AWS, Java, Go

Work Experience

Research Assistant　　　　　　　　　　　　　　　　　　　　　　　　　　May – Aug 2024
McMaster University　　　　　　　　　　　　　　　　　　　　　　　　　　*Hamilton, ON*
- Constructed **Python** package to abstract simulation of 2 types of power systems into 1 interface
- Utilized **pandas** to process & display data more efficiently & unit testing to confirm code functionality
- Modeled the package using **UML** using patterns like factory pattern to speed up simulation setup by 50%

Software Engineering Intern　　　　　　　　　　　　　　　　　　　　　　May – Aug 2022
Civiconnect　　　　　　　　　　　　　　　　　　　　　　　　　　　　　*Beamsville, ON*
- Developed backend of new website for blog with about 40 posts using **Python**, **Django, HTML, & CSS**
- Collaborated using **Agile** methods & deployed site in highly scalable format on **AWS** using **Linux**
- Completed 10+ client-requested improvements on 2 other live websites to improve usability
- Recognized as having best overall website amongst 4 intern teams by showing superior functionality

Extra-Curricular

Control Systems Developer　　　　　　　　　　　　　　　　　　　　　Oct 2023 – May 2024
McMaster RoboMaster Team　　　　　　　　　　　　　　　　　　　　　　*Hamilton, ON*
- Coded a robot using **C** on an **STM32** MCU to randomly change spinning speed to reduce projectile impacts
- Wrote efficient **C** code to allow aiming of projectile launcher in response to computer vision output

Projects

Autonomous Parking System　　　　　　　　　　　　　　　　　　　　　Sep 2024 – Apr 2025
- Developed a system to autonomously park a 1/10th scale vehicle while avoiding obstacles
- Used RANSAC to process stereo camera point clouds & extract features associated with parking spots
- Crafted a control system in the form of a **ROS** to smoothly park vehicle following a safe & efficient path

Stepper Motor ASIP　　　　　　　　　　　　　　　　　　　　　　　　　Mar – Apr 2024
- Implemented **ASIP** using **Verilog** code to control a stepper motor with full & half stepping
- Tested the functionalities using **Quartus Prime simulation** to verify correctness of the ASIP

Dynamic Fan Controller　　　　　　　　　　　　　　　　　　　　　　　　　Mar 2023
- Coded STM32 MCU to smartly adjust a cooling fan's speed in response to temperature changes via **PWM**
- Set up STM32 MCU to convert the sensor voltage to a usable temperature via **A2D**

7-Segment Display Finite State Machine　　　　　　　　　　　　　　　　　Nov – Dec 2022
- Achieved a **perfect** grade for designing a **sequential finite state machine** to cycle through 9-digit number
- Crafted **20+ K-maps** to design 3 initial machines on **Multisim** using **flip-flops** & **logic gates** for analysis
- Built machine that minimized logic gates on **breadboard** & fixed 2+ errors with **oscilloscope**
- Generated **timing diagram** using Multisim to verify outputs & transitions of finite state machine states

Online Voting Program　　　　　　　　　　　　　　　　　　　　　　　　　Oct 2021
- Imported & parsed **999** fictional votes using **Java** by creating file importing system for elections
- Ensured during **8-hour** competition via debugging that the program only processed valid votes
- Named finalist & demoed program to professional judges as part of **collaborative team** of 3