Marcus Hurt

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Education

University of Michigan, Ann Arbor, MI — ***April 2023***

Bachelor of Science in Engineering in Computer Engineering — Major GPA: 3.035

Skills

Arduino, Beckhoff PLC/HMI, C, C++, C#, Docker, Embedded Linux, GOLang, HTML, IoT, JavaScript, MATLAB, Python, RAPID, ROS, Structured Text, Twincat, Verilog

Job Experience

Optimax Systems, Inc. – Robotics Engineer — ***September 2023 – Present***

- Developing ROS2 control system on Ubuntu Real-Time Kernel enabling toolpath planning and execution
- Providing IO and state control with Beckhoff PLC using TwinCat structured text and HMI programming
- Integrating ROS2 and Beckhoff PLC/HMI software for station management
- Enabling externally guided motion control between ABB robot controller and ROS2
- Implementing comprehensive unit testing via Google Tests and TcUnit frameworks

Optimax Systems, Inc. – Robotics Software Intern — ***June 2021 – December 2022***

- Pioneered remote workflow for code updates and testing using GitLab
- Designed MATLAB, HTML, JS, and Python GUIs interfacing with ABB IRC5 and OmniCore controllers
- Documented workflows to deploy code revisions from R&D development to the manufacturing floor
- Reduced duplicate code in three major projects resulting in 50% reduction in lines of code
- Developed full-stack robot motion applications using RAPID, JavaScript, Python, MATLAB, HTML, C++

University of Michigan Dept. of Mechanical Engineering – Research Assistant — ***August 2018 – May 2019***

- Computer engineering lead in “Applications of the Passive Dynamic Walker Method for Bipedal Robots” research
- Created an inexpensive platform for passive-dynamic bipedal walking robotics research
- Coded Arduino sketches that enabled a bipedal robot to walk with high energy efficiency

Whirlpool Corporation, Benton Harbor, MI – Engineering Intern — ***June 2018 – August 2018***

- Created Google scripts that interpreted workload data and automated productivity tracking
- Developed team website that aggregated team information and improved efficiency

Project Experience

University of Michigan – Thrust Vector Controlled (TVC) Hopper — ***August 2022 - December 2022***

- Created a Thrust Vector Controlled “hopper” powered by an Electric Ducted Fan
- Designed and tested power and flight computer PCBs in Altium Designer
- Developed control and telemetry TCP server hosted on a Raspberry Pi

University of Michigan – Forest Health Sensor Project — ***August 2021 - December 2021***

- Created sensor array to monitor and track forest health and fires using Particle Photon IoT board
- Monitored CO2 levels, temperature, and GPS location with I2C-connected sensors
- Implemented cloud communications via LTE and LoRa feather modules using UART
- Relayed data from sensor arrays to a central hub using LoRa modules
- Demonstrated ability to expand sensor connections over SPI, I2C, and UART

University of Michigan – Autonomous Quadcopter Project — ***August 2018 – December 2018***

- Led a four-person team programming an autonomous quadcopter to navigate obstacles
- Implemented navigation through lidar and ultrasonic sensors, PID controls, Ardupilot and Mission Planner

Volunteer Experience

FIRST Robotics – Mentor — ***May 2018 – May 2019***

- Mentor for FIRST students in FRC, VEX, FTC, and LEGO robotics