Matt Kowalczykowski

Mechatronics Engineering

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Summary of Qualifications

- Co-op experience designing, soldering and programming of PCB's including use of Express PCB and EagleCAD
- Responsible for optimizing a small scale manufacturing operation of electrical control boxes
- Part of a team working on a novel engineering product with mechanical, electrical and software components
- Developed understanding of the engineering process involved in the creation of a large embedded control system
- Use of professional tools in classroom and industry including oscilloscopes, precision multimeters, soldering station, wiring equipment, as well as industry standard software packages
- Experience in multiple programming languages such as C/C++, Python, Java in Linux and Windows environments
- Development with modern micro controllers such as the ARM M4 Cortex and ATMEGA328 to create embedded systems

Work Experience

Junior Hardware Engineer *EnerMotion Inc.* *May 2015 – September 2015 (Co-op Term)*

Overall Co-op Rating: Outstanding

- Responsible for design, machining, wiring and assembly of electrical control boxes for large remote systems
- Soldering and debugging of PCB's and other electrical components, including work in Express Schematics and PCB software
- Created test rigs for scientific testing of new batteries, components and wiring connectors
- Programming of PIC micro-controllers and debugging of C code
- Working with 3D printers and SolidWorks software to create custom plastic brackets for PCB's
- Production of several different wiring set ups, including measurement, stripping and crimping to ensure reliability and safety
- Optimization and organization of electrical room for small scale manufacturing and ESD safe work areas

Weld Cell Lead *Jancox Stampings* *May 2014 – September 2014 (Co-op Term)*

Overall Co-op Rating: Outstanding

- Experience operating multiple manufacturing machines including welders, steel presses and quality control stations
- Raised production standards of an automotive weld cell by 26%, and beat previous peak production by 37%
- Developed communication and troubleshooting skills with management and technical workers
- Improved efficiency by taking the time to learn minor troubleshooting fixes for equipment
- Use of several quality control techniques to ensure a high quality product for the customer

Education

McMaster University *3rd year Mechatronics Engineering Student* *September 2013 – Present*

- Courses in control systems, embedded systems, electro-mechanical devices and professional software
- Hands-on design labs making practical devices such as a working speaker system and temperature based fan controller

Relevant School Projects

- MECHTRON 3TA4 – Embedded System Design I
    - Use of STM32F4xx board to design numerous embedded systems
    - Weekly labs involved projects such as a reaction game, temperature sensor, and motor controller
    - Interrupt based control structures applicable to real world control systems
- SFWR ENG 3K04 – Software Development: Robot Controller
    - Object-oriented behavior class to control both simulated and physical robots
    - Implemented numerous behavior methods for different pathing options and sensor interfacing
    - C++ running remotely in a Linux server environment

Extracurricular Activities & Personal Projects

McMaster Sumobots Competition

- Competition to development an autonomous robot that is able to push other robots out of a circular ring
- Interfacing with different types of sensors, including IR emitter/receiver and ultrasonic
- Developed embedded system PCB using ATPMEGA32 micro controller programmed with Arduino software
- Use of EagleCAD software to create detailed electrical schematics and PCB layouts
- Machining of aluminum chassis using shop tools such as milling machine and chop saw

Robotic Arm

- 5 DOF robotic arm controlled by high torque servo motors, ATPMEGA32 based custom PCB, and Raspberry Pi
- Raspberry Pi and PCB directly interface through board to board connectors and communicate through I2C

Web Design

- Learned the basics of web design such as HTML, CSS, Javascript for use in personal projects
- Have utilized modern web frameworks such as Bootstrap to ensure proper responsiveness on various devices

My website at www.mattkowalczykowski.com has pictures and updates of some of these projects!