Michael Hosue
3A Mechatronics Engineer

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SKILLS

Software Tools

C
C++
Python
Java
Angular
Docker
MySQL
PHP
VB
QT
MQTT
ROS
Git & SVN
Bluetooth LE
Linux & Bash
Matlab
Keil RTX-RTOS
TCL

Hardware

Altium Designer
Arduino
NXP LPC1768
PIC
Nordic nRF52
STM32
Logic Analyzers

Courses

Sensors and Instrumentation
Actuators and Power Electronics
Linear Systems and Signals
Algorithms and Data Structures
Computer Structures and Real Time Systems
Microprocessors and Digital Logic
Microprocessor Systems and Interfacing

EXPERIENCE

Product Engineer

Sera4 - 2018

Created python library to enable remote access & control of BLE enabled lock controllers.

Enhanced product test system by re-designing PCB to fix UART communication and adding functionality for BLE tests, re-flashing firmware during tests and more.

Designed procedure to calibrate product RTCs within 10s without the need for tools external to the board.

Software Developer

Avidbots - 2017

Created messaging system between robots and web application via MQTT to show status updates.

Updated and maintained angular web application, PHP APIs and telemetry streamer to robots.

Implemented cleaning map generation software for web application in Java.

Software Engineer

Peraso Technologies Inc - 2017

Designed and extended functionality of linux build script in TCL for various target platforms.

Increased efficiency of build system by 400% through reducing required resources per build.

Simplified CI system by restructuring source code and modularizing build setup.

Computer Engineer

AGFA Graphics - 2016

Developed and tested user control software for industrial printers in C++ and QT used for GUI.

Improved product safety by implementing a collision detection setting allowing the print head to scan for possible collisions prior to printing.

Increased bulk printing efficiency by 150% through implementing layered pauses; allowing users to set 'media change' pauses prior to printing.

PROJECTS

Gait Phase Detector

A C++ program that detects the different phases of bipedal movement in real time. The detector reads data from accelerometer and gyroscope sensors attached to a person's foot, filters and processes the signals and displays the data in a Qt GUI.

Lazy Car (Self Driving Robot)

A self driving robot controlled by a PIC microcontroller and equipped with phototransistors, a thermistor and a hall effect sensor. The robot uses step detection to remain on track and is capable of detecting electro-magnetic fields and sampling temperatures along its course..

Bright Box

1st place at UofT Hacks

Created smart light switch using "Particle" prototyping board providing users control and ability to set alarms and schedules over HTTP requests via an android application.

RTX Space Attack!

A space battle video game developed on the Keil LPC1768 evaluation board. The game uses the RTX-RTOS to implement and manage concurrent threads for the various components of the game and players control their space craft using the onboard push buttons and joystick.

Linear Variable Differential Transformer

An electro-mechanical transducer used to measure displacement through change in induced EMF. An Arduino collects the output and displays the final displacement with 3% uncertainty.

Nerf Guard Turret

Developed control software for NXT nerf turret with automated target lock on using ultrasonic sensors and remote control capabilities via Bluetooth connection.