Ruihang (Ray) Wu

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HIGHLIGHT

Proficient in Simulink and Stateflow software development for NXP microprocessor based automotive ECU
Worked with low level communication protocol such as CAN, LIN, SPI, I2C, BLE GATT profiles
Experience working with hardware schematic and performing board level reworks to troubleshoot problems
Familiar with automotive tools such as Vector CANalyzer, CANoe, built CAN networks for testing of ECU software

EDUCATION

Master of Science, Electrical Engineering, Wayne State University — Expected December 2024
Bachelor of Science, Electrical Engineering, McGill University

WORK EXPERIENCE

Embedded Software and Controls Engineer *Magna International* — June 2020-Present

- Developed embedded software using Matlab, Simulink, and Stateflow for automotive powered seat
- Implemented advanced motor control such as stall detection, movement coordination, and fault monitoring
- Standardized the team on a modular software architecture that enabled reusable software components
- Constructed software blocks in Simulink and validated generated embedded C code from Simulink coder
- Worked with NXP provided MCAL for 32-bit MCU for ADC input, PWM output, and SPI, UART communication
- Led transition from C based toolchain to Matlab model-based toolchain to support new prototype ECU
- Validated software against requirements using Simulink test toolbox and test harnesses with unit test cases
- Integrated software components from team members into a main model in preparation for testing on hardware
- Specified and implemented messages between onboard devices using SPI and UART, and other ECUs using CAN and LIN with custom DBC files.
- Calibrated software parameters on hardware using CANalyzer and CANoe
- Performed prototype ECU validation and board bring-up
- Debugged low level hardware signals using logic analyzer, oscilloscope, DMM, and data logger
- Schematic design and board layout for peripheral boards that enabled Bluetooth communication
- Processed and visualized logged data using Python and supporting libraries such as Pandas and Matplotlib
- Supported demos onsite at OEMs and trade shows

Research Assistant *Wayne State University* — January 2020-June 2020

- Aided in transferring past seat controller module functionality to a Simulink based toolchain
- Replicated functionality using Simulink and Stateflow charts
- Documented new development environment and software development process

Customer Support Specialist *Sutherland Global Services* — June 2019-December 2019
Student Support Specialist *OneClass* — January 2018- June 2019
R&D Hardware Test Intern *Reflex Photonics* — January 2015-August 2015

- Tested prototype optical transceivers to meet design specifications
- Developed Python scripts to communicate with test equipment and record test data
- Set up test stations with optical attenuators, signal analyzers, oscilloscope, and other testing equipment
- Reviewed test results on faulty transceivers and updated supervisors with test results

PROJECTS

Sudoku Image Recognition Solver

- Created a python program that is able to recognize and solve a sudoku puzzle using a camera
- Used OpenCV and NumPy library for image processing and contour finding functions
- Trained a machine learning classifier using scikit-learn from gathered data for number recognition

IoT Pipeline Simulation

- Built a system in C that explored the interaction of embedded peripherals and sensors with cloud-enabled services
- Involved data transmission between several devices and services, which is one of the main hallmarks of IoT design
- Designed user interfaces for Android application to select data to be sent to AWS Lambda
- Implemented different communication protocols such as UART, BLE, and HTTP GET and POST

HOBBIES

Mechatronics, IoT devices