Alan Tondryk

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EDUCATION - University of Michigan

BSE Computer Engineering | GPA: 3.65/4.00 *Ann Arbor, MI* *2019 - 2023*
MSE Embedded Systems expected April 2024. *Ann Arbor, MI* *2023 - Present*

WORK EXPERIENCE

Advanced Embedded Systems | Graduate Student Instructor *Ann Arbor, MI* *Sept - Dec 2023*

- I taught lab sections, held office hours, created exam questions, ran review sessions, created a lab.

Embedded Software Engineer | Qualcomm Internship *San Diego, CA* *Summer 2023*

- I continued the development of my parsing tool library from last summer utilizing a COM-standard interface for the API. This was important as both Qualcomm and its vendors would use this library. I added unit tests using the Catch2 framework to verify my software. After my program passed all test cases and was built in Qualcomm's build environment, it was added to the main repository.

Embedded Software Engineer | Qualcomm Internship *San Diego, CA* *Summer 2022*

- Qualcomm Engineers use a parsing tool for retrieving information from memory crash dump binary files. I updated this tool by adding data driven elements such as XML based chipset specifications that were read at runtime. This greatly increased engineering operations by removing the need to recompile the tool source code for new chips.
- Later in the internship, I prototyped a rewrite of the tool from C# to C++ and from a standalone executable to a dynamically linked library. A library format allowed for future integration with the existing windows debugger or any other executable. I created a test executable compiled against this library to showcase functionality and usage, and presented my work to my team.

Embedded System Design Undergrad Teaching Assistant *Ann Arbor, MI* *Jan - Apr 2023*

PROJECT EXPERIENCE

Embedded Software Engineer | Michigan Mars Rover *Ann Arbor, MI* *Sept 2019 - Present*

- 1st Place at two international robotics competitions (URC and CIRC).
- Implemented drive program and state machine in Python for our CAN based motor controllers.
- Configured CMake to add support for a Raspberry Pi on our ROS based build system.
- Worked on bridge programs between the main onboard computer, STM32 Nucleo boards and Beaglebones, in order to enable our science team to perform life detection tasks.
- Parsed UM7 inertial measurement unit binary packets and NMEA sentences over UART communication, enabling our navigation team to perform localization.

Wearable Rangefinder

- I designed a wrist-mounted device to measure and display distance to users. The custom PCB provides 3.3V and 5V power from a 9V battery to power the STM32 processor, LiDAR, and oled screen. An upcoming iteration will feature freeRTOS, a USB-C rechargeable battery, and faster display rates.

Force Feedback VR Gloves | Haptic Hands *Ann Arbor, MI* *Sept - Dec 2022*

- Haptic Hands is a low cost wireless, wearable glove with haptic feedback to be used with existing VR systems developed for the Advanced Embedded Systems course at U of M. It consists of motors and potentiometers controlled by an STM32 processor, packaged on a custom designed PCB. I worked on all aspects of this project including PCB design, CAD and 3D printing, component interfaces in C, etc.

Maze Solving Robot | Micromouse *Ann Arbor, MI* *Jan - Apr 2022*

- Developed and programmed a robot along with a controller to autonomously solve mazes.
- Designed an STM32 based controller with a wireless radio, keypad inputs, and LCD screen with custom C interface which allowed for seamless control of our robot and visual feedback.