Shogo Nakamura

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EXPERIENCE

Embedded Software Engineer II
Rivian Automotive

May 2022 – Present
Carson / Irvine, CA

- Implemented supervisor task utilizing an external watchdog communicating over SPI that overlooks multiple tasks in a tricore ARM based system to verify execution sequence and timing.
- Lead and executed safety critical features such as vehicle crash signaling, reaction to system reset due to an unresponsive task, and other sensitive features to keep the driver and passengers safe at any given time.
- Identified and addressed issue where a delay function became an infinite loop with extremely specific values causing run-time resets to occur at an extreme rare percentage.
- Utilized debugger and oscilloscope to modify system reactions before an unexpected reset to ensure vehicle remains in a safe state.

Embedded Software Engineer I
Rivian Automotive

January 2021 – May 2022
Carson, CA

- Worked closely with Electrical Engineering team to bring capabilities such as voltage to temperature conversion, hardware diagnostics through software, and populating test points for debugging.
- Provided API's that interacted with GPIO's and other device peripherals to various members of the team to interact and communicate with different parts of the system.
- Revised CAN database as well as source code to modify behavior of message transmission rate and payload to track data to improve feature stability.
- Performed and added unit testing for various embedded functions using Google Test and Fake Function Framework.

Quality Assurance Engineer Intern
Prism Software

June 2018 – March 2020
Irvine, CA

- Implemented 100+ test cases in Python3 for unit testing (PyTest) using the company's API which helped decrease regression testing time by more than 50%.
- Collaborated in developing a framework that installs the latest build, pulls the latest code changes from GitHub, executes over 400 test cases, emails the test results, and uploads the test results to Jira.
- Automated incoming bug tickets to be sorted by priority and introduced a verification system in which to decide whether the bug is reproducible or not.

PROJECTS

Embedded Linux | *C*

September 2023 – Present

- Manually configured Linux image using buildroot to learn and understand Bootloader, Kernel, and file system configurations.
- Created a TFTP server on the host Ubuntu machine to transfer files to the Beaglebone and write Linux image files (zImage and .dtb) directly to memory using memory write on U-boot.
- Wrote a simple Linux kernel module and modified build configuration files such as KConfig and Makefile to compile module directly into the source.

Volt-meter | *C*

January 2020 – March 2020

- Collaborated to design a breadboard circuit using an Atmega32 Microcontroller that reads voltage and displays the average, minimum, maximum, and current voltage

EDUCATION

University of California
Bachelor of Science in Computer Science

Irvine, CA
September 2017 – March 2020

TECHNICAL SKILLS

Microcontrollers: Aurix Tricore, Aurix 6 Core, ESP32, Beaglebone Black
Languages: C, Python3, C++
Operating Systems: SafeRTOS, FreeRTOS, Bare metal, Linux
Software Tools: Git, Jira, Jenkins, Gitlab, Google Test, Fake Function Framework, Vector tools
Hardware Tools: Debugger, Oscilliscope, Logic Analyzer, JTAG, Multimeter, PCAN (CAN/CAN-FD)