KASH PIRANI

kpirani.ca · kash@pirani.net · github/KashPirani · linkedin/in/kpirani

EXPERIENCE

SIBROS TECHNOLOGIES INC
Sept-Dec 2019

Firmware Development Intern - **C/C++, Python, Bazel, Docker**
San Jose, CA

- Helped architect a modular bootloader design by restructuring code layers, drivers, and linker/build scripts, which reduced the time to develop a bootloader for new hardware from three weeks to a single week.
- Wrote MISRA C compliant CAN, flash, watchdog, timer, and port/pin abstraction interfaces - commonizing the top layer bootloader code across all hardware variants.
- Implemented the drivers and logic for each interface on NXP S32K, Infineon Tri-core, and STM SPCxxx boards
- Proposed a HIL testing setup, and wrote a modular Python library to interface with the hardware and manage test suite logic through PyTest. This enabled regression testing to be performed for the first-time on bootloaders.
- Participated in test-driven development, and achieved 100% branch and line coverage on all C code written by making use of the CMock and Unity test frameworks and the consistency from executing in Docker containers.

QUALCOMM
Jan-Apr 2019

Embedded Audio Software Developer - **C, Java, Python, Android**
Markham, ON

- Developed and tested MISRA compliant C driver code that implemented a fast mute feature on a codec using I2C and GPIO controls, with the goal of preventing unwanted speaker noises caused by automotive system failures.
- Expanded a DSP driver to support playback and record paths for new generation hardware, which enabled more intensive audio development and testing to be performed.

FORD MOTOR COMPANY
May-Aug 2018

Firmware Developer - **C, AUTOSAR, Greenhills MULTI**
Ottawa, ON

- Developed and integrated custom C drivers and applications with an AUTOSAR compliant RTOS for an ECU that handled message routing and over-the-air transmissions.
- Improved CAN download time by 246% by reducing delay between frames and limiting excessive handshaking.
- Implemented a state-machine in C for inter-chip communication over SPI/UART to allow for split workload among two processors on a single board.

WATONOMOUS - SAE AUTODRIVE CHALLENGE
Sept 2018-Now

Director of Electrical Division - **Python , ROS**
UWaterloo, ON

- Manage and coordinate 4 subteams consisting of over 20 members, with the goal of aligning electrical division OKRs while facilitating cross-divisional development of our autonomous vehicle.
- Created and worked on the telemetry subteam, which develops Python scripts to monitor the CAN bus and compute server for critical data. Streamed CAN data over a ROS publisher node to other processes in the autonomous software stack, and stored critical information in a database for real-time visualization and analysis.

AUTOMATIC GUITAR TUNER
May -Jul 2019

Personal Project - **C, DIPTRACE**

- Implemented a Fast Fourier Transform on a TI MSP430 to detect the frequency of a string plucked on a guitar.
- Designed and printed a PCB shield that included motor drivers and circuitry to filter/offset the analog input.
- Created a feedback control algorithm to tune a guitar string by rotating a stepper motor attached to its peg.

EDUCATION

UNIVERSITY OF WATERLOO
2017 - 2022

Candidate for a Bachelor's in Computer Engineering

- Cumulative GPA 3.9 (Dean's Honour List)
- Relevant Courses: System Programming and Concurrency, Compilers, Data Structures and Algorithms