Aakash Pirani

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SKILLS

Development

Languages:

- 3 years formal education **C++**.
- Practical proficiency in **C**.
- Scripting experience in **Python**.
- Streamlined/Automated build processes using **Batch** and **VBS**.
- Android app development in **Java**.
- Web development in **HTML/CSS**.

Tools:

- **Vector** automotive suite.
- **Altium** CircuitMaker.
- STM32 CubeMX.
- Android Studio.
- Used JIRA, Jenkins, Confluence, and **Git** in an agile environment.

Platforms:

- Familiar with embedded platforms: Arduino, **STM ARM Cortex**, Onion Omega, Altera **FPGA, NXP Multi-core MCUs, Qualcomm MDM** chips.
- Worked on embedded systems running **AUTOSAR** and **QNX**.
- Experience with Windows and Linux environments.

Embedded

- Experience reading and writing technical documentation.
- Worked with **I^2C, SPI, UART, CAN**.
- Developed and debugged software running on an **RTOS**.
- Experience **cross compiling** in a **Linux** environment using **GNU, Makefiles, Linker Files, Pragmas.**
- **Debugged multi-threaded firmware** over **JTAG** using Green Hills Software.

EDUCATION

University of Waterloo

Candidate for a Bachelors in Computer Engineering
2017-2022

EXPERIENCE

Ford Motor Company

FIRMWARE DEVELOPER May 2018 - August 2018

- Developed for the 2020 CAN gateway and modem in C and Python.
- Developed and Integrated in-house firmware with an AUTOSAR OS.
- Implemented a custom protocol for inter-chip communication.
- Overhauled single file project implementation by seperating CAN routing and base software into two files loadable via OTA transfer.
- Improved software download speeds over CAN by 246%.

WATonomous - SAE AutoDrive Challenge

TIME SYNC - TEAM LEAD Sept 2018 - Present

- Currently designing adaptors to interface with the car's various sensors, so that they can all be triggered by a reference clock.
- Writing drivers and custom firmware to timestamp sensor output.

Waterloo Nanorobotics

SAM ROBOT - ELECTRICAL LEAD Oct 2017 - Present

- Updated robot design to use transistor H-bridges instead of relays, improving effective control of solenoids.
- Wrote Arduino programs to control movement of a 300 micron robot using keyboard controls.
- Placed 2nd at the ICRA 2018 Microrobotics Challenge in Brisbane.

Waterloo SAE Formula Electric

TELEMETRY - HARDWARE PROJECT LEAD Sept 2017 - May 2018

- Assembled a two node CAN Bus using STM F0s, MCP 2515, 2562.
- Designed a telemetry system to transfer sensor data from the car's CAN bus over radio to a remote base station.
- Wrote scripts to encode and decode data sent over radio.

PROJECTS

WeathAR

AR WEATHER APP - JAVA, C# PennApps XVIII

- Android application that would portray a weather forecast in AR.
- Wrote a RESTful API to fetch and parse weather data based on the user's current time and location.
- Simulated forecasted weather conditions using an embedded Unity activity and the ARCore plug-in.

https://github.com/KashPirani/WeathAR

Alarm Plus Plus

WEATHER CONNECTED ALARM CLOCK - C++

- IoT Alarm Clock that used an Onion Omega2, 7-segment display and LEDs to portray time and weather using preset light patterns.
- Wrote custom C++ libraries to interface with LEDs and display; used Wunderground API to fetch location specific weather.
- Cross compiled code in an Ubuntu environment via makefiles, utilizing the Linux command line and GNU.

https://github.com/KashPirani/AlarmPlusPlus