

# KASH PIRANI

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## EXPERIENCE

### Embedded Audio Software Developer QUALCOMM

Jan-Apr 2019  
Markham, ON

- Worked on automotive Android, modifying user and kernel-space code
- Created an Android app for customers to test/demo an audio effect library
- Wrote a C driver and modified the device tree to support an I<sup>2</sup>C I/O expander
- Modified codec drivers to support a gpio toggled mute, and created a path in the audio stack for user-space control
- Expanded Linux drivers to support playback/record for an A2B slave board
- Scripted in python to classify and fix 3000+ GHS compiler and MISRA warnings
- Independently made a python script to format C files according to a style guide

### Firmware Developer FORD MOTOR COMPANY

May-Aug 2019  
Ottawa, ON

- Developed and integrated custom C code with an AUTOSAR OS
- Modified CAN drivers in C to support CAN FD, and used Vector automotive hardware/software to create and verify new routing paths between ECUs
- Improved software download speeds over CAN by 246%
- Implemented a new protocol for inter-chip communication over SPI/UART
- Debugged software on an RTOS using the GHS MULTI over JTAG
- Wrote python scripts to insert additional data into binary files, modified linker files to allocate required space, and read back data upon target boot

### Time Sync Project Lead & Mentor WATONOMOUS

Sept 2018-Present  
UWaterloo, ON

- Configured FLIR Blackfly cameras to trigger with a PPS signal from a GPS
- Created custom adapters to relay PPS and NMEA info from a GPS to LIDARs
- Currently configuring a GPS synced PTP server using a Raspberry Pi

### SAM Robot Electrical Lead UW NANOROBOTICS GROUP

Sept 2017-Present  
UWaterloo, ON

- Designed PCB with MOSFETs to allow an Arduino to pulse solenoids
- Wrote Arduino script to interface with a custom path-finding program allowing for autonomous movement of a 300 micron magnetic robot
- Placed 2nd at the 2018 ICRA Microrobotics Challenge in Brisbane, Australia

## PROJECTS

### WeathAR AR WEATHER APP

PennApps XVIII  
UPenn, Philadelphia

- Android application that would overlay weather and hazard conditions in AR
- Wrote a RESTful API to fetch/parse weather data for a user's current location
- Simulated weather conditions using an embedded Unity activity and ARCore

## SKILLS

### Languages

- C++
- C (embedded)
- Python
- Java (app dev)
- ARM Assembly
- VHDL
- Batch and VBS

### Technologies

- CAN, I2C, UART, SPI
- Altera FPGAs, STM ARM dev boards, Arduino, Raspberry Pi
- Oscilloscope
- Vector CAN/Ethernet interfaces
- Green Hills Debugger

### Software

- Linux kernel and command line tools
- Android, Android Studio, a2b, fastboot
- Git, SVN, Perforce
- JIRA, Jenkins, Gerrit
- Altium CircuitMaker
- STM CubeMX
- Vector configurator, developer, CANalyzer
- GreenHills MULTI

## EDUCATION

### UNIVERSITY OF WATERLOO

Candidate for a  
Bachelor's in  
Computer  
Engineering  
2017 - 2022

Cumulative: 87.46%  
Dean's Honor List