Urban Pistek

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Experience

Athos — Redwood City, CA, USA
Electrical Engineering Intern — Jan 2021 - April 2021

- Developed firmware for the NRF52833 and STM32L4 MCU chips using the **Zephyr RTOS** with **Python** for scripts and testing.
- Utilized embedded tools such as **GDB**, **Jlink**, **Altium** and **Oscilloscopes** for development and debugging.
- Developed an IMU, Magnetometer and digital signal processing driver using CMSIS and custom sensor APIs.
- Implemented a firmware architecture for automated PCBA testing of peripherals such as BLE, SPI, I2C, GPIO, PWM and UART.
- Designed a BLE Client in **Python** on macOS to perform GATT writes with custom **Protobuf** message definitions.

IntelliCulture — Kitchener, ON, Canada
Software Engineering Intern & Consultant — May 2020 - Present

- Led development of a containerized **NodeJs** data pipeline using **Docker** with **Fauna** for NewSQL cloud data storage.
- Incorporating tools such as **Docker**, **Fauna**, **Kubernetes**, **Gitlab** and **Anaconda** to build a serverless data infrastructure.
- Led development of 2 web applications using **NodeJs**, **MySQL**, **NGINX** and **Bootstrap** as the technology stack, launching Beta versions within 6 weeks of starting development.
- Developed a **NodeJs** server with **ExpressJs** using **Python** scripts as child processes and **Socket.io** for data streaming.

Geotab — Kitchener, ON, Canada
Applications Engineering Developer Co-op — Sept 2019 - Dec 2019

- Performed R&D with **hardware** and **firmware** for IoT devices within a embedded development environment.
- Designed a custom **PCB** for hardware testing using **Altium** to develop the schematic, board layout and component libraries.
- Utilized embedded tools such as an oscilloscope, logic analyzer and debugger for development and debugging.
- Engaged in rapid prototyping utilizing **Arduino** for quick development while reverse engineering various PCB's and devices.

UWAFT EcoCar Team — Waterloo, ON, Canada
Electrical Engineering Team Lead — Sept 2018 – Sept 2020

- Led electrical development of HV and LV systems to convert a stock Chevrolet Blazer into a hybrid electric vehicle with SAE level 2 autonomy, managing a sub-team of up to 10 student volunteers.
- Led development and testing of 3 custom **PCBs** with **KiCAD** for interfacing with **CAN**, performing LV diagnostics and controls.
- Wrote software in **C++** for 3 custom PCBs using a **STM32** as the MCU with the Arduino IDE and CAN-Bus-Shield library.
- Authored wiring schematics and harness diagrams for the vehicle HV powertrain and LV systems using **VeSys**.

Projects

BLE Occupancy Sensing — Skills/Technologies: Python | Anaconda | Keras
Developed a **Convolutional Neural Net** (CNN) to detect human occupancy with 80% accuracy.

Relay Control and LV Diagnostics PCB — Skills/Technologies: PCB Design | KiCAD | C++
Designed a PCB to control relays and perform LV diagnostics through CAN.

Skills

- **Programming:** Python, C, Javascript, C++, NodeJs, Anaconda, Keras, ROS, HTML, MySQL
- **Software:** Git, Zephyr RTOS, Docker, GDB, Altium, KiCAD, Matlab, Arduino, VSCode, Ubuntu
- **Technical Skills:** Firmware, Hardware, Full Stack, PCB Design, Data Engineering, Deep Learning
- **Soft Skills:** Leadership, Project Management, Public Speaking, Agile Workflow Environment

Education

University of Waterloo — Waterloo, ON, Canada
Candidate for BASc in **Mechatronics Engineering** — Graduation: April 2023