Keith Choa

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PROFILE

Industry Skills: Experience in real-time embedded systems, and collaborating in agile/scrum environments
Languages: C++ (C++17 standard), C, Python, PHP, Javascript, HTML, CSS, SQL
Other: Bash, SCons, GNU Make, Git, .NET (C++/CLI), OpenCV, MongoDB, Plotly, Flask, React.js, Node.js

WORK EXPERIENCE

Safe Software

C++ Software Developer — ***Sep 2020 - Dec 2020***

- Designed and developed an original dynamic library plugin integrating Uber's H3 format into Safe Software's geospatial data integration platform in native C++ (C++17 standards/patterns)
- Integrated 9 distinct Uber H3 algorithms, able to interface with Safe's already existing 200+ geospatial formats with cross-platform support, creating new capabilities for IoT-based customers
- Recognized by the Team Lead of the Platforms Team for implementing an innovative technology, and as a result, was appointed to speak about the plugin at a lightning talk to represent my team

ecobee

Embedded Software Developer, Part-Time — ***Apr 2020 - Jun 2020***

- Deployed Python-based systems for remote data acquisition in XML format on test fixtures worldwide, allowing for production monitoring of 100,000+ units of smart home devices in a MongoDB database

Embedded Software Developer, Co-Op — ***Jan 2020 - Apr 2020***

- Designed and tested software in C++/CLI (.NET framework) to improve the calibration process of test fixtures used to qualify 10,000+ units of smart home sensors monthly
- Developed computer vision software in OpenCV in C++ to verify LEDs in the new line of SmartSensors, reducing set-up time by 75%, creating 4 distinct test parameters, and saving 15+ production hours
- Planned and created an interactive manufacturing dashboard tool in Python that pulls from a MongoDB database via aggregation pipelines, giving manufacturing engineers new analytic capabilities
- Consulted and collaborated with hardware and manufacturing engineers to continuously pioneer new solutions and technologies for complex problems in a time-sensitive production environment

PROJECTS

Cherry Pi keithchoa.com/cherry-pi — **Dec 2020 - Jan 2021**

- Created an electric guitar effects pedal using a Raspberry Pi 4 B, MCP3202 ADC, and MCP6002 op-amps
- Developed signal processing firmware utilizing a native Linux SPI sysfs interface for serial communication with the ADC, and the wiringPi library to simulate analog output with PWM

lectr.me @ DeltaHacks VI keithchoa.com/lectr-me — **Jan 2020 - Jan 2020**

- Awarded the Best Education Hack among over 800 other participants
- Developed an audio manipulation algorithm to optimize online learning for university students in Python, using an interface written in PHP, hosted on an Apache web server over a 2-day period

VEX Robotics Team keithchoa.com/vex — **Aug 2016 - Dec 2018**

- Represented our school at an international VEX Competition; Awarded the 2018 VEX Innovate Award
- Innovated efficient and accurate firmware for controlled and autonomous robotic motion with PID control, utilizing various rotary encoders, gyroscopic, and ultrasonic sensors

EDUCATION

University of Waterloo, BASc. Computer Engineering (co-op) — **Aug 2019 - Present**

- Cumulative GPA of 91.68% (4.0 GPA), ranked 13th out of 279 students (top 5%, 1A Term)
- Dean's Honours List Awardee since start of program (two consecutive academic terms)
- Received the President's Scholarship of Distinction and Richard & Elizabeth Madter Entrance Scholarship