Alex Klemenchuk — Embedded Developer

Seattle, Washington, United States

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Looking to work on challenging physical devices with a keen interest in improving software quality at all levels through collaboration. I enjoy building embedded gadgets in my spare time.

SKILLS

- Languages:
  - High Familiarity: C, C++, Python, Bash
  - Some Experience: Java, Rust, JavaScript
- Microcontrollers: Cortex M33 & A53, ESP32/ESP8266, AVR
- Protocols: UART, I2C, SPI, WiFi, Bluetooth.
- OS: FreeRTOS, VxWorks, Yocto, Linux.
- Test Equipment: Oscilloscopes, Multimeters, Logic Analyzers, Protocol Analyzers

EXPERIENCE

Embedded Software Engineer II   **Seattle, Washington, USA**
Amazon   *March 2020 - September 2022*

Halo Devices (7 months)

- Developed customer facing customization features and UI on an ARM M33-based fitness smartwatch on FreeRTOS in C.
- Triaged and resolved stability and UI issues, improved metrics and diagnostics around OTA state.
- Mentored intern on developing a framework to measure RTOS performance (task latency, CPU utilization, queue events) and discover regressions.
- Rearchitected build workflows, toolchain handling and IDE support, and rewrote build/flash/debug/test developer documentation.

Prime Air (2 yrs 6 months)

- Contributed to internal software development kit (C++, Python) which is used for the development and deployment of saftey-critical algorithms, and simulation for avionics platforms on VxWorks and Linux systems.
- Work included optimizing simulation performance/stability through rearchitecting C++ and Python code generation, assisting with the maintenance of a Yocto distribution, and developing a framework to replay previous execution data on new software using developer-written functions to convert between representations of messages.
- Helped evaluate OSses and design a new high level application architecture with a focus on simplicity and determinism.

Embedded Display Software Engineer   **Markham, Ontario, Canada**
Qualcomm Canada   *October 2019 - April 2020*

- Enabling, and verifying hardware features on Windows display drivers for Qualcomm ARM SoCs using protocol analyzers in C and C++.
- Work included configuring DisplayPort hardware to support unique display configurations, overriding display settings, allowing several fail-safe fallbacks when a monitor is not detected, and enabling synchronized userspace-to-hardware DisplayPort interfaces.
- Communicating with external clients ensuring the features delivered met expectations and were understood when delivered.

Firmware Developer Co-Op   **Waterloo, Ontario, Canada**
Cognitive Systems   *May 2017 - December 2017*

- Created optimized software implementation of WiFi 802.11g PHY layer transmitter in C on a constrained custom vector processor with test suite involving remotely instrumenting spectrum analyzers, and Matlab scripts.
- Created Linux kernel driver patch and improved speed and sensitivity of LTE cell detector by tweaking a series of convolution-based synchronization signal detection algorithms.

Open Source Project Work Course (ReviewBoard.org)   **Mississauga, Ontario**
Beanbag, Inc.   *September 2018 - December 2018*

- Developed plugins, feature additions and bug fixes to the web back-end (Python, Django) and front-end (Backbone.js) with consistent code style, documentation, and test suite.
- Maintained consistent code quality through collaborative code review, and produced demo videos of features.

EDUCATION

University of Toronto Mississauga   **Mississauga, Ontario, Canada**
HBSc - With High Distinction - Computer Science Specialist   *June 2019*
GPA: 85.6/100