

## SOFTWARE DEVELOPER

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- Experienced embedded Linux and full-stack cloud Software Developer looking for internship or co-op opportunities.

## PROGRAMMING SKILLS

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- **Languages :**
  - **Fluent:** C/C++, Java, Python, Javascript, Bash
  - **Proficient:** Go, Ruby/Rails, Assembly, Verilog, Wiring, Rust
  - **Familiar:** Scala, iOS (Swift), Android (Java)
- **Technologies :**
  - **Operating Systems:** Linux, MacOS, Windows, iOS, Android
  - **Frameworks & Libraries:** Django, Flask, Rails (Ruby), React, ReactiveX
  - **Tools:** Protobuf, Yocto, Jenkins, Terraform, CMake
  - **Database:** Postgresql, MySQL, MongoDB, Redis
  - **Cloud:** AWS, Docker, Kubernetes, Google Cloud Vision API, Azure Cognitive Systems, Gitlab CI, Github Actions

## EXPERIENCE

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- **Zaber Technologies Inc.** Vancouver, BC  
*Software Co-op* *May 2019 – December 2019*
  - Added C++ language capability to the Zaber Motion Library using EJS templates and protocol buffers. This includes the setup of the CI build, packaging and deployment systems for the finished library on multiple OSes and architectures.
  - Implemented core Go library functionality for the Zaber Motion Library. This included ASCII and binary communication protocol features required to release the library.
  - Optimized the delta-encoding algorithm used for cross CPU SPI transfers, resulting in a 12x increase in encoding performance. This was critical in getting Zaber's new controller to meet it's bandwidth requirements.
  - Wrote multiple C++ firmware features for a new controller, including I/O drivers and factory reset functions.
- **Ryffine Inc.** Denver, CO  
*Software Programmer (Contractor)* *January 2019 – July 2019*
  - Created an automated build and publish system for DITA content using Docker and Gitlab CI. This new automated content delivery system allows writers to save time by effortlessly updating their cloud content.
- **D-Wave Systems Inc.** Burnaby, BC  
*Systems Software Co-op* *May 2018 – December 2018*
  - Wrote API endpoints for D-Wave's Leap cloud service back-end to enable critical front-end user interface functionality such as maintenance notifications and solver access.
  - Created a large number of relevant Django unit tests alongside the API endpoints to increase test coverage and reduce the number of regression bugs encountered.
  - Created front-end views for maintenance notifications, QPU solver availability and user profiles using the React JS framework.
  - Wrote and maintained back-end integration between the Leap web application and the Business team's Zendesk and Salesforce systems so that the Business team could access new leads and generate important reports.
  - Created an automated docs website publishing pipeline using Terraform and Jenkins that enabled the technical writers to publish docs without involving developers. This saved both developer and writer time by completely automating what was a long manual build process.
- **Novax Industries** Delta, BC  
*Software Programmer (Contractor)* *October 2017 – March 2018*

- Wrote C userspace Linux drivers for an ARM based custom embedded system to enable use of the i2c gpio and sd card reader devices.
- Wrote Python and Bash scripts for managing logs on the system.
- Updated the XML configuration library to speed up and make the configuration system more robust, as well as align with additional new specs.
- Created Yocto recipes and layers for the embedded device, shortening the time to deploy a custom Linux distribution to the embedded device, saving developer time during development and testing.

• **Minesense Technologies Ltd.**

Vancouver, BC

*Software Intern*

*Summers of 2015, 2016 and 2017*

- 2017**
- General C/C++ application development and maintenance for multiple x86 based Linux embedded PCs.
  - Rewrote existing C++ code for transferring large amounts of spectrum data between embedded PCs into object oriented C++ classes. The new classes improved system performance and reduced the time to integrate new features.
  - Wrote a kernel module to expose embedded application settings in the Linux /proc filesystem, reducing embedded system configuration time and complexity and therefore speeding up application development and testing as well as allowing run-time configuration changes to facilitate testing on a read-only disk.
  - Wrote an automated update utility that allowed for automated updates across multiple write-protected disk partitions which reduced the update time from 20+ minutes to a few minutes and eliminated human error.
  - Created over 10 new Yocto recipes and modified several existing recipes to integrate the code into a new automated build system, improving the time to configure builds by reducing it into a single configuration line.
  - Created a web-based remote testing and install application, turning a 30+ minute error-prone manual install and configuration processes into simple automated task that could install the software in less than 5 minutes. The application could also automatically test the system configuration, making the developer time to test the device negligible.
- 2016**
- Created several Unix shell and Python scripts for use in an x86 based embedded Linux system.
  - Manually patched and compiled the Linux kernel with real-time and other custom patches in order to improve the I/O throughput of the system, allowing it to achieve critical system performance requirements.
  - Modified the Linux kernel init script and initramfs to boot with overlays (Union filesystem) to make the system read-only from disk. This improved the embedded PC robustness and reliability during frequent but unexpected power cuts.
- 2015**
- Created an automated unit testing framework using Jenkins, Python unittest and Fabric that allowed developers to test remote embedded Linux systems from their local machines.

## EDUCATION

• **University of British Columbia**

Vancouver, BC

*Bachelors of Applied Science*

*Sept. 2016 – Expected May 2022*

• **Sir Winston Churchill HS**

Calgary, AB

*International Baccalaureate Curriculum*

*Sept. 2013 – July 2016*

## QUALIFICATIONS

- **Canadian Pilot Certificate:** Small Remotely Piloted Aircraft System - Advanced Operations; Achieved 2019
- **Canadian Amateur Radio License:** Basic w/ Honors; Achieved 2017

## AWARDS

- **Winner, Best use of AWS, Best Domain, Best Crypto, et al.:** NW Hacks, University of British Columbia; Achieved 2020, 2019, 2018, 2017
- **1<sup>st</sup> place:** Feeding 9 Billion Case Competition, University of British Columbia; Achieved 2018
- **2<sup>nd</sup> place:** Calgary Collegiate Coding Competition, University of Calgary; Achieved 2016

## CLUBS & DESIGN TEAMS

- **UBC Unmanned Aircraft Team:** Software Systems Team Lead; 2018 – Present
- **UBC Code the Change:** Full-Stack Developer on Chingari project; 2017 – 2018
- **UBC Baja Team:** Suspension Sub-team, microcontroller sensor project; 2016 – 2017
- **FRC Team 4719 - Technetronic Bulldogs:** Mechanical and Software Teams; 2013 – 2016

**As a dual United States of America and Canadian citizen, I am available to work in either nation.**