Joaquin Philco

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Experience

Software Developer Toronto, ON

Royal Bank of Canada *January 2023 – August 2023*

- Worked with **Spring Boot** framework and other **REST API tools** for developing features for Royal Bank of Canada's Chorus API, automating employee's work and services.
- Led a Certificate Authorities migration project for the Chorus application's API, Which helped maintain and improve the security integrity of RBC employee's network.
- Contributed to the successful migration of the application to the cloud, transitioning from OCP3 to OCP4. Acquired knowledge in continuous integration tools, cloud computing software, and concepts such as **Helios**, **OCP4**, **Kubernetes**, and **Postman functional tests**.
- Analyzed connections between API servers and client requests using **Wireshark**, a networking tool.

Extracurricular

Software Co-Team Lead and Senior Member Toronto, ON

York University Robotics Society - York University *September 2022 - Present*

- Established a **Linux** development environment using **Ubuntu** to manage the project's entire code-base.
- Led a group of students in charge of developing the code for controlling a six-wheeled lunar rover within the software team.
- Developed a low-level double-step PID controller for a six degrees of freedom robotic arm in **Python** and **C++** using the **ROS2** framework.

Open Source Contributions

Camera Application for FuriOS *(GitHub Link)* | *Qt, C++, DBus, QML, Gio, CMake, GeoClue*

- Overhauled, as the main maintainer, the user interface and functionalities of the native camera application for Furi Labs, significantly improving usability and optimizing the user experience.
- Implemented QR code functionality, enabling the scanning and processing of QR codes from video frames.
- Created a GeoClue D-Bus client to automatically append GPS coordinates to photos.
- Improved application launch time by 30%, enhancing overall user experience.

Projects & Research

Cube-Sat Communication Testing Tool ***(Published Academic Paper)*** | *Phython, C++, Arduino, I2C, UART*

- Designs and implemented a communication framework utilizing **I2C** and **UART** protocols on a **Raspberry Pi Pico**, enabling integration of multiple sensors and peripherals for real-time data acquisition in embedded systems.
- Developed a continuous data mirroring system that streams live sensor data from the testing platform to the base station via **radio frequency communications**, ensuring real-time monitoring and analysis of system performance.
- Conducted an analysis of the collected data, culminating in a comprehensive research paper submitted to the **International Astronautical Congress 2024 in Milan - Italy** that detailed findings and insights, contributing to the understanding of communication system performance and reliability in Cube-Sat applications.

FPGA-VGA-Game ***(Github Link)*** | *SystemVerilog, DE10-Lite, VGA*

- Developed a "Flappy Bird"-style game utilizing an FPGA on the DE10-Lite board, effectively integrating a VGA display for real-time graphics rendering and user interaction.
- Architected the game's design using finite state machines, translating the logic and functionality into efficient SystemVerilog code, ensuring smooth gameplay and responsiveness.
- Displayed the game onto a screen using a VGA connection and a controller made on the FPGA with SystemVerilog

Arm Control ROS2 Package ***(Github Link)*** | *Python, CMake, C++, ROS2, Bash*

- Designed and implemented a control system for a 6 degrees of freedom robotic arm with precise PID control.
- Developed a networking configuration utilizing UDP channels to facilitate real-time replication of sensor data between the robotic arm and control center.
- Encapsulated the code within a ROS2 package, ensuring seamless integration and compatibility in **ROS2** environments for enhanced usability.

Education

York University, Lassonde School of Engineering Toronto, ON

Honours-Bachelor of Engineering in Computer Engineering *September 2020 – May 2025*

Technical Skills

Languages: Python, Java, C++, Bash, C, MATLAB, CMake, SystemVerilog
Frameworks: JUnit, ROS2, Springboot, Qt
Developer Tools: Git, Postman, Docker, Excel, Visual Studio Code
Miscellaneous: Linux, Terminal & Shell, LaTeX, Microsoft Office, GNU Radio, Arduino