# Ro-ee Tal

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## WORK EXPERIENCE

**PRINCIPLES OF SOFTWARE CONSTRUCTION** | Teaching Assistant — Sep - Present 2018 | Vancouver, CA

- Instructing programming labs and holding design review sessions and office hours to teach and assist students.
- Topics and tools: data structures, design specifications, debugging, networking, concurrency, Azure, Git, Gradle, Java.

**QUANTUM DEVICES GROUP** | Research Assistant — Jan - Apr 2018 | Vancouver, CA

- In search of topological qubits, collaborated with partner research groups, Professor Joshua Folk, and others in the lab.
- Ran experiments and analyzed data of hybrid superconductor semiconductor nanowire devices with a masters student.
- Explored new fabrication recipe to improve proximity effect of superconducting contacts in the nanowire devices.
- Expanded the lab's Igor codebase to support asynchronous data measurement, making experiments up to 4x faster.
- Documented and maintained the cryogenic dilution refrigerator. Developed new warm-up system.

**QUANTUM DEVICES GROUP** | Summer Research Assistant — May - Aug 2017 | Vancouver, CA

- Prototyped a 17 bit lock-in amplifier which has 1 bit more precision than the industry standard and is 10x cheaper.
- Developed a Linux communication server and custom PCB and programmed and integrated a dedicated signal processing MCU, which includes sockets and scheduling, HTTP, filtering, amplification and phase-sensitive detection.

## TECHNICAL PROJECTS

**UBC SAILBOT** | Software Developer — Jan 2018 - Present | Vancouver, CA

- Developed the control block for rudder using Matlab and currently developing a RRT* local path-finding algorithm in C++ and Python to visualize path optimization given weather, obstacles, ship movements and possible sailing maneuvers.

**INSTRUMENT DESIGN** | A fully autonomous and intelligent robot — May - Aug 2018 | Vancouver, CA

- Built the only robot with machine learning out of 16 groups with three other peers. Received the best prototyping grade.
- Analyzed the challenge and designed, prototyped and developed a solution from scratch.
- Integrated neural network object detection into a PID navigation system for finding and retrieving the objectives.
- Designed the software and electrical systems (which were combined into a custom PCB-shield), implemented digital and analog signal processing, configured the ARM MCU timers and interrupts and programmed the controls in C.

**EDUHACKS** | A real-time comprehension assistant web-app — Sep 2017 | Vancouver, CA

- Developed a web-app with 4 other students at a 24 hour hackathon.
- Implemented Tensorflow's SyntaxNet natural language understanding toolkit and a Flask server in a Python back-end.

**UBC ORBIT** | Command and Data Handling Team Lead — Sep 2016 - Sep 2017 | Vancouver, CA

- Lead the Command and Data Handling sub-team (5 developers) to develop the satellite's communication system, which is resilient to radiation-induced errors while in space. Built using STM32 ARM MCUs and programmed in C.
- Published to IAC: Duplicated Voting Processors for the Low Cost Radiation Hardening of Computers

**POCKET WALLET** | A money tracking app for managing allowances — Dec 2013 | Johannesburg, SA

- Self-taught Objective-C and IOS development over the summer and developed first mobile application.
- Downloaded a few hundred times in Africa, Europe and North America during the year it was available.

## EDUCATION

**UNIVERSITY OF BRITISH COLUMBIA** — Expected 2021 | Vancouver, CA

Engineering Physics Major | Honour's Mathematics Minor | Dean's Honor List

## SKILLS & INTERESTS

**PROGRAMMING** C | Java | Python | Matlab | Igor | SQL
**TOOLS** Git | Gradle | Travis CI | JUnit | STM32CubeMX | Simulink | Docker
**ENGINEERING** Eagle | PCB Design | SolidWorks | Machining | 3D Printing | Lazer + Waterjet Cutting
**PHYSICS** E-Beam Lithography | Thermal Evaporation | SEM