# Tristan Lee

+1(778)363-7904 @ tristan.rene.lee@gmail.com linkedin.com/in/tristanrlee/

## Summary of Qualifications

- Strong ability with electronics and PCB design in Altium, which was gained from design projects in Engineering Physics and UBC Rocket, as well as various personal projects.
- Proficiency in troubleshooting PCB's and prototype circuits using electrical tools including oscilloscopes and multimeters, developed in both technical and project environments.
- Developed several projects using Python and Java with several software tools such as ROS, OpenCV, and various API's, in addition to constructing firmware used to run a robot.
- Experience with designing in OnShape and Solidworks and manufacturing designs using a variety of subtractive and additive techniques.
- Excel in a team enviroment, displaying the ability to continuously contribute success, while keeping a positive, eager, and open mindset towards the task at hand.

## Skills

**Electrical** Altium • oscilloscope • EAGLE • Soldering • Arduino • Function generator • PCB Design
**Programming** Python • Java • C/C++ • Git • Linux • OpenCV • ROS • MATLAB • PlatformIO
**Mechanical** OnShape • SolidWorks • Fusion 360 • 3D Printing • Milling • Lathe • Laser cutter

## Education

### ENGINEERING PHYSICS

3RD YEAR

- Engineering physics is a program that strives to educate students who strive to develop leading edge technology, while also pursuing a deeper understanding for physics.
- Key courses: Signal and Systems, Electrodynamics, Quantum Mechanics, Instrument Design

## Technical Experience

### MANUFACTING TEST ENGINEER

ENERSYS - ALPHA TECHNOLOGIES

Jan. 2022 – May 2022 Vancouver, BC

- Assembled 5 PCB test stands, validated LabVIEW signal tests to specific pins using an oscilloscope, troubleshot and repaired connections and tests to ensure proper performance.
- Created Python and LabVIEW software to enable data collection and PDF conversion for PCB tests, then succesfully implemented the software into 10 different test stands.
- Constructed circuit schematics in Altium Designer and wrote test scripts in LabVIEW for PCB test stands, as well as identified test points in Altium for a variety of DC-DC converters.
- Ensured the functionality of over 60 PCB assemblies on a variety of tests stands and documented results, in addition to verifiying the functionlity of the test stand or characterizing the nature of a fault.

## Project Experience

### ENGINEERING PHYSICS ROBOT COMPETITION UNIVERSITY OF BRITISH COLUMBIA

May 2022 – Aug 2022 Vancouver, BC

- Collaborated with a group of 4 to design and manufacture an item retrieval robot that navigated a course using line following and 10kHz IR sensing, achieving 4th place.
- Designed and constructed over 10 circuits including power distribution for motors and sensors, DC motor drivers, stepper motor drivers, and microcontroller pin distribution.
- Troubleshot and tested many circuits constructed with my teammates, to ensure the presence of desired signals using an oscilloscope.
- Integrated firmware into a C++ statemachine using PlatformIO to control a linearly translating robot arm and 2 claws, as well as sense and acquire retrievable items using sonar sensors.
- Created CAD designs for the chassis and claw sections of our robot using OnShape.

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## Project Experience

### ENGINEERING PHYSICS MACHINE LEARNING COMPETITON University of British Columbia

Sep 2022 - Dec 2022 Vancouver, BC

- Worked in a group of 2 to design and create state machine architecture to control a robot using ROS Noetic on a simulated course in Gazebo.
- Implemented OpenCV in Python to capture images of license plates inside a simulated enviroment and identify characters using a convolution neural network.
- Setup data collection pipeline using OpenCV a Linux directory structure to collect over 25'000 images needed to run a data collection program using OpenCV for convolution neural network training for robot self driving.
- Managed features and working tree with my teammate using Git version control and GitHub.

### UBC ROCKET AVIONICS University of British Columbia

Oct 2022 - Present Vancouver, BC

- Designed an ignition circuit in Altium designer as a part of a stackable, modular flight computer, used for lighting 3 e-match stages on a competition rocket.
- Assembled components on ingition PCB's using reflow soldering techniques, then performed a variety of tests such as continuity checking for e-matches and ensuring the desired operation of opto-isolators and MOSFETs.
- Currently collaborating with a team of six to integrate each individual PCB into a complete flight computer capable of controlling and collecting data of the rocket.

## Awards

### PRESIDENTIAL SCHOLARS
University of British Columbia
Awarded to accomplished Canadian students.

### TUUM EST EXPERIENTIAL
University of British Columbia
Awarded to students with excellent academic standing and strong personal profiles.

### TREK EXCELLENCE
University of British Columbia
Awarded to top 5% of UBC undergraduate students.

## Interests

**Technical** Robotics • Machine learning • Spaceflight • High voltage electronics
**Non-Technical** Downhill skiing • Mountain biking • Cross-country skiing • Surfing • Hiking • Powerlifting