



# Steven Brown

## Engineering Physics Co-op Student

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### Skills

<b>Programming:</b>	Java, C/C++, Python, MATLAB, Qt GUI Design, Bash Scripts
<b>Electrical:</b>	Altium, Oscilloscope, Analog & Digital Circuits, Soldering
<b>Mechanical:</b>	SolidWorks, Servomotor, Ultrasonic Sensor, Prototyping, Hand Tools
<b>Lab Skills:</b>	Graphing, Excel Spreadsheets, Data/Error Analysis

### Technical Project Experience

#### Image Tracker – UBC, Vancouver

Sept – Oct 2021

- Implemented a homography based image tracker with GUI using SIFT (Scale-invariant feature transform) and PyQt.
- Given a template image of an object, the application highlights the object in a live web camera stream.
- Tested multiple image object pairs with rotation and translation of the object and resulted with 98% accuracy.

#### Advanced Logger – NZ Technologies Co-op, Vancouver

Jan – Feb 2021

- Implemented a data logging system in C++ using Qt and a raspberry pi for NZ Techs touchless elevator devices.
- The logger kept track of when actions occurred, in addition to errors and sensor data, and stored data in a daily report which was automatically sent out by email through the pi every day.
- The emailed daily report also included a version of the data in excel format where it could be graphed.
- The system also tracked the intension of the user and how the device reacted. It looked at whether the reaction was correct or whether the user intended a different response.
- The logger was implemented so that it could be applied for multiple devices.

#### Image Manipulation – UBC, Vancouver

Sept – Oct 2020

- Designed and developed algorithms with test cases in java to manipulate images such as, mirroring, section painting, denoising, green screening, rotating, and text aligning.
- The section painting algorithm was able to paint a specified block of pixels the average colour values of the pixels within that block.
- Given a specific colour, the green screening algorithm was able to identify the largest connected region of the image that matches exactly that colour. It then determined a rectangle that bounds this "green screen" region and replaced all the pixels matching the specified colour with a provided background image.

**Robotic Claw – UBC, Vancouver****Jan – Apr 2020**

- Designed and developed, as part of a team, an autonomously closing claw able to pick up a range of objects from golf balls to cans of soup and hold for a minimum of 10 seconds.
- Placed 2<sup>nd</sup> in the variety objects round and 1<sup>st</sup> in the bulk object round out of 16 teams.
- Lead programmer using C to detect objects and trigger activation using an ultrasonic sensor connected to a servo motor through a breadboard.
- Decided to use a tri-pronged claw in order to minimize material used and maximize the number of objects that could fit in the claw.
- Constructed conceptual prototypes using drawings (c sketch), a physical prototype using cardboard, and then the final functioning product using hand tools to cut sheet aluminum.

## Technical Work Experience

**Embedded Software Engineer Co-op – NZ Technologies, Vancouver Jan – Apr 2021**

- Developed embedded applications for deployment on Windows and embedded Linux.
- Developed interactive GUIs using Qt.
- Designed communication routines for embedded microcontrollers and microprocessors.
- Managing all software testing, stable build releases, and version control.

## Education

**The University of British Columbia****Sept 2019 – May 2024 (expected)**

- Engineering Physics, BAsC
- Deans Honour List

**Sept 2019 – Sept 2021**

## Non-Technical Work Experience

**Produce Service Clerk – Thrifty Foods, North Vancouver****Sept 2018 – Aug 2019**

- Ensured the grocery store was maintained in a clean, safe and appealing state to its customers by organizing shelves and assisting customers in their daily shopping needs.

## Awards

- UBC Trek Excellence Scholarship Recipient
- “Big Ticket” Basketball Tournament Academic Scholarship
- BC Achievement Scholarship
- Highest Grade Award in year 12 Math, Physics, and Law

## Interests

- Avid weightlifter & runner with combined training up to 6 times per week.
- Played senior basketball and continue to play in a men’s league once per week.
- Experienced skier at locations such as Whistler, Silver Star, Grouse, etc.