



# Kaitai (Alan) Tong

[kaitaitong.github.io/EngineeringPortfolio/](https://kaitaitong.github.io/EngineeringPortfolio/)

## 3<sup>rd</sup> Year Engineering Physics

### Skills

Computer	Electrical	Mechanical	Others
· MS Office/VBA	· Basic Control Theory (PID)	· Solidworks/Onshape	· Time Management
· MATLAB	· LTI System	· Manual Tools	· Responsible
· Java	· PCB Layout	· Prototyping Tools (Water jet cutting, 3D printing, Laser cutting)	· Writing, speaking, reading Mandarin
· Arduino Programming	· Function Generator	· Wood-Working	
· Python	· Oscilloscope	· Machine Shop	
· HTML/CSS	· Troubleshooting		
· Basic C	· Soldering		
· Adobe Illustrator			

### Work and Volunteer Experience:

#### BC Children's Hospital OPSEI Research Institution

January 2017 – May 2017

##### *Data Analyst, Booking Form Designer (Coop Student)*

- Re-designed OR Booking Form that had recently been approved and implemented in the hospital system using VBA programming language in Excel. New functions include: auto-highlighting and error messaging when the mandatory fields are unfilled to increase the accuracy during data input, function button of saving, sending, clearing and printing.
- Two Major Projects on Data analysis to help improve the efficiency in the hospital, respectively "Narcotic Audit" collaborated with Pharmacy Department and "Emergency Cases 2A & 1 Research Study", supervised by Dr. Sonia Butterworth. Both projects required data collection from different sources, as well as data cleaning and sorting to further generate and present analytical result.
- Assisted operation engineering manager in performing statistical analysis and further designed a simulation to predict patient flow in the year of 2018.

#### Junior Achievement Company Program

October 2014 – May 2015

##### *Student Participate - Product Design and Assembly / Salesman*

- Simulated a startup company selling a product called "Card Reincarnate" (Card with Seed Paper).
- Developed valuable communication and negotiation skills by directly contacting seed manufacturers for pricing and details of different types of seed both in person and through phone call.
- Managed to produce and sell more than 500 Cards to customers in Vancouver (Target Market: Students, teachers, young couples), gaining a revenue of over \$1700 as a team and with an average profit allocation of \$100 per member.

#### Canada Day at Canada Place

July 2014

##### *Team Leader*

- Duties included warm welcome to international tourists, successful problems solving when tourists encountered issues which developed interpersonal communication skills.
- Assigned tasks to the team members, as well as managing each individual's break time and shifts.

## Technical Projects / Laboratory Experience

---

### Programming Skills

#### Thermal Lab Group Project

June 2017

- Wrote a simulation program using MATLAB to measure thermal waves in an aluminum rod attached to a power resistor at one end. The simulation plotted actual data collected from 5 sensors along the rod through Arduino as well as theoretical curves given adjustable input values for comparison.

### Mechanical / Electrical Skills

#### 17<sup>th</sup> UBC ENPH Autonomous Robot Competition (1<sup>st</sup> Place)

July 2017 – August 2017

*Mechanical Lead* | [Competition Details](#) | [Media Link](#)

- Finished first in the competition as the only team scored 18/18 under time limit for all 5 matches among the 16 teams.
- Responsible for designing and manufacturing several versions of chassis, drive train systems, lifting mechanism and PCB mounting systems using Onshape, a full-cloud 3D CAD system, and other prototyping tools, such as laser cutter, 3D printer and water jet cutter under strict specifications.
- Soldered the first fully-functioning H-bridge and IR filtration circuit on PCB in the team, and successfully debugged teammates' circuits using Oscilloscope and function generator.

#### UBC Solar Student Team Contribution

September 2016 – April 2017

- Belt system design for rear suspension of the solar car using theoretical analysis.
- Building and designing a 3.2' x 3.2' x 5.9' wooden shelf to display heavy project parts to sponsors in a group of four members.
- Participated in front suspension assembling.
- Composed a mechanical report on safety belt system that included case study and analysis to meet the requirement provided by 2017 Formula Sun Grand Prix, a track race at the Circuit of the Americas.

#### Autonomous Claw Project

March 2016

- By following professional engineering design process, managed the team to make a Mechanical Claw Retrieval System which has a trigger attached on one of the claw's arms to control its closing.

## Education

---

University of British Columbia

Vancouver, B.C.

Faculty of Applied Science

Engineering Physics

September 2015 - Present

### Awards & Achievements

- Dean's Honour List (UBC)
- Certificate of Excellence from BCCH
- \$6000 UBC International Major Entrance Scholarship
- \$4500 Trek Excellence Scholarship
- Top 10% in 2015 Euclid Math Contest
- 2015 Math Award (Killarney Secondary)
- Golden Key membership

## Interests & Activities

---

- 3D printing, Badminton, Graphic Design