

Alicia Pan

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Projects

555 Timer LED Flasher PCB | DipTrace, LT Spice, SnapEDA, TinkerCAD

2021

- Created block diagram and circuit schematic to capture NE 555 IC behaviour
- Simulated circuit in **LT Spice** and TinkerCAD to determine suitable range of passive component values for desired LED flash frequency
- Analyzed datasheets to select compatible and cost-effective components
- Iterated through several layout and routing options during design reviews

Robotics Team Lead | Machined Robot with VEX Parts

2016 - 2019

- Prototyped and machined parts for **precise manipulation** of irregularly shaped objects
- Assembled pneumatic and electrical systems of industrial-sized robots (solenoids, double-acting cylinders, encoders, motor controllers)
- **Coordinated 20+** people in the acquisition and analysis of data on other robots to develop successful match strategies
- **Led a drive team** of 5 people during high-pressure playoff matches to **win 1st place** at 2017 and 2019 district competitions

Autonomous Line-Following Car | Arduino Microcontroller & Soldered DC Motors

2019

- Programmed an **Arduino**-controlled car to tight-poll **infrared sensors** and autonomously complete a designated course
- Developed performance tests for vehicle mobility and maximum drivable incline
- Resolved edge cases for sensor accuracy by calibrating angle adjustment on difficult turns

Assembly Line Robot | LEGO Mindstorms EV3 Brick & RobotC Programming

2019

- Collaborated in a team of 4 to design, build, and demo an autonomous robot that assembles user-specified parts with logic to handle concurrent time-sensitive requests
- Interpreted readings from **colour, touch, gyro, and encoder sensors**
- Documented design iterations and tested product performance

Experience

Linear Circuits & Electromagnetism TA | University of Waterloo

Jan - Apr 2021

- Planned help sessions tailored to student needs, attended by **50+ individuals**
- Reliably met deadlines to grade **100+ student submissions** every week
- Stress-tested labs involving **op-amps, capacitors, and AC signals** with simulations
- Debugged student circuits and corrected key misconceptions to ensure student success
- Communicated effectively with instructors, first-year students, and admin staff to coordinate scheduling

Research & Design Intern | PASS Inc. | Waterloo, ON

May - Aug 2020

- **Led product development** of screen time management advice cards and other mental health resources created with Adobe InDesign
- Conducted **20+ detailed user-base interviews** and investigated research papers on the impact of screen time
- Generated **2 international bulk-buy sales** via marketing materials such as monthly newsletters and a blog post article

Girls In STEM Council Member | FIRST Robotics Canada | Toronto, ON

Aug 2018 - 2019

- Planned a national overnight conference with **100+ attendees** to promote equality and diversity awareness in STEM
- Interviewed industry professionals and wrote an article published by FIRST Canada
- Taught **80+ students ages 5-12** basic robot mechanics and programming as a youth robotics mentor at the Ontario Science Centre

Hardware

- Arduino
- Breadboard Prototyping
- Soldering
- Machining
- Oscilloscope
- DMM

Design

- SolidWorks
- AutoCAD
- DipTrace (PCB Layout)
- LT Spice
- GD & T

Programming

- C/C++
- VHDL
- PLC Ladder
- Assembly (Nios II)
- Python
- MATLAB
- Java

Education

University of Waterloo

Mechatronics Engineering

Class of 2024

Class Representative

Engineering Ambassador

Awards

Norman Esch Award | 2020

Student Entrepreneurship
Scholarship

Robotics Team Award | 2019

Outstanding Individual
Contribution

Gareth David Harvard

Memorial Scholarship | 2019
Engineering Impact

Interests

Midnight Sun Design Team
Incoming member on solar car
electrical/hardware subteam

Concert Violinist

Mississauga Symphony
Youth Orchestra

Volleyball

Competitively trained athlete