Brielle Chenier

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EDUCATION

University of Waterloo, *BASc in Mechatronics Engineering*   2020 – 2025
- Undergraduate Research Assistant in Wildfire Research within Indigenous Communities

SKILLS

- CAD Software: Certified Solidworks Professional (CSWP), Onshape, Catia, AutoCAD
- Mechanical Design: Ansys, Onscale, 3D Printing, CNC, Waterjet, GD&T.
- Software: Jira, Confluence, Python, Arduino, C++, Git, Java, LabVIEW, Matlab

EXPERIENCE

R&D Engineering Intern, *Formlabs*   May 2023 – Present
Somerville, United States
- Designed and optimized dust filter for the SLA printer ensuring adequate cooling.
- Collaborated closely with suppliers to determine the best design within constraints and performed physical testing to validate mathematical models.
- Improved prototype parts in CAD to match injection molded standards and supplier feedback.
- Managed wiring for the printer in CAD, and communicated with electrical and manufacturing teams to ensure compatibility and ease of installation.

Battery Engineering Intern, *Tesla*   September 2022 –
December 2022
Palo Alto, United States
- Redesigned O-ring seal to decrease install force by 80%, tested with Instron.
- Calculated heat generation, long term joint resistance and used metrology data to ensure proper performance and manufacturing feasibility.
- Created a test plan and performed 90 degree peel tests to measure polymer adhesion.
- Designed waterproof face seal in Catia and analyzed compression range in Ansys.

Mechanical Technical Lead, *Waterloo Aerial Robotics Group*   September 2020 –
August 2022
Waterloo, ON
- Integrated mechanical system with electrical and firmware for competition airframes.
- Designed quadcopter frame in SolidWorks to carry a 2kg payload and fly 3km.
- Built and performed calculations to ensure sufficient lift, flight time, and appropriate landing gear for drones.
- Designed device to grab, pick up and deploy medical packages for fixed-wing aircraft.

Mechanical Engineering Intern - Battery Team, *Beta Technologies* 🔗   January 2022 – April 2022
Burlington, United States
- Designed fixtures for more efficient battery pack assembly and testing in Onshape
- Performed tests to ensure battery pack reliability during crashes and short circuits.
- Created a program in Python to automatically graph and compare results between tests.
- Analyzed battery crash test results and expected deformations using Ansys.
- Created a demo to demonstrate battery technology internally and at tech conferences.

Team Captain, Robot Lead and Outreach Lead, *FIRST Robotics, Robototes Team 2412*   September 2016 – June 2020
Bellevue, United States
- Led meetings for 60 member team and oversaw build and integration for 150lb robot.
- Planned and ran 30 STEM outreach events resulting in over 1,000 team volunteer hours per year, launched a free robotics summer camp for students in grades 3-5.

PROJECTS

Friendship Lamp, *Color Changing Lamp* 🔗   October 2020 – February 2021
- Developed a program for a Raspberry Pi lamp to connect via Firebase to a buddy lamp and display matching colors in real-time.
- Created a website in React to remotely control lamp colors.
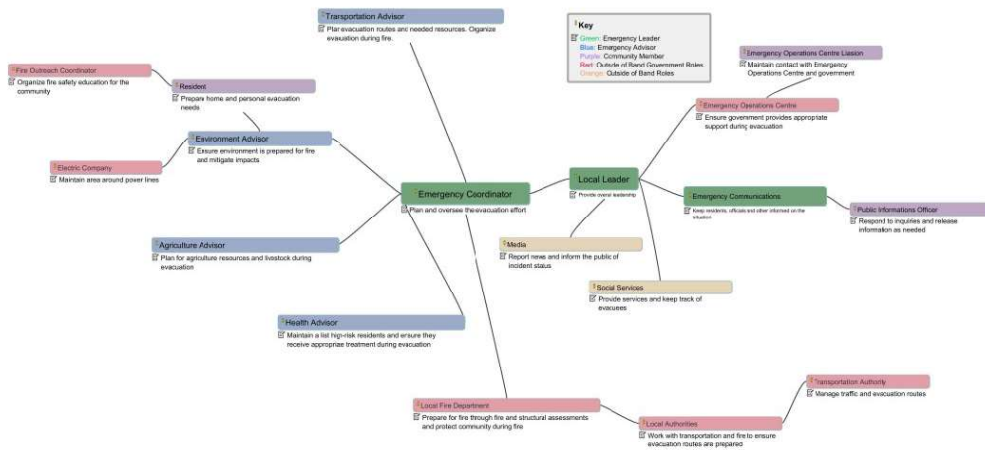- Designed lamp case in SolidWorks and 3D printed to house LEDS

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Undergraduate Research Assistant —
Wildfire Preparedness in Indigenous Communities

- Reviewed previous indigenous evacuations and case studies to add to a comprehensive list of tasks for wildfire evacuation.

- Sorted over 100 tasks into roles and timelines, including the communication needed between roles

- Created an interactive web app with React that makes the research data easily accessible and digestible for communities to aid in evacuation preparedness

Mind Map of Role Interaction

Web App

Clickable map with icons for each role (prototype image above) that will direct to a page with further tasks

Clickable timeline and icons for residents to go through and understand specific tasks and order they should be preformed
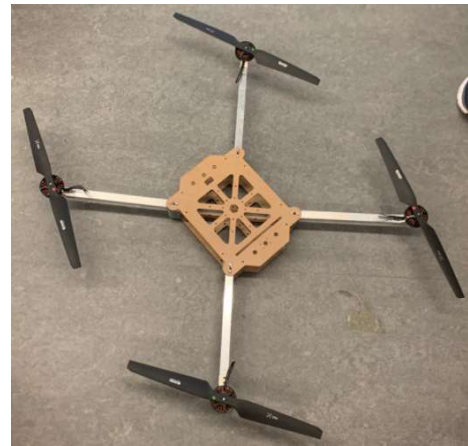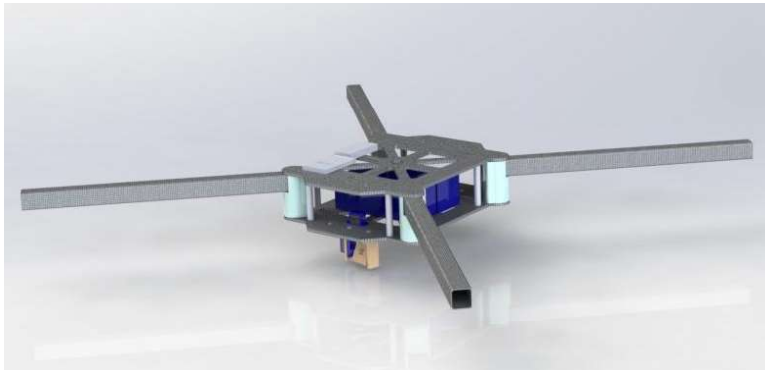
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WARG 2022 Competition Drone

- 4kg drone capable of carrying 2kg payload
- Designed in SolidWorks and prototype made with laser cutting fiber board, final design made with carbon fiber
- 3D printed brackets for arm to keep them rigid during flight as well as distribute battery load
- Attachment spots for camera gimbal, grabber and electrical components
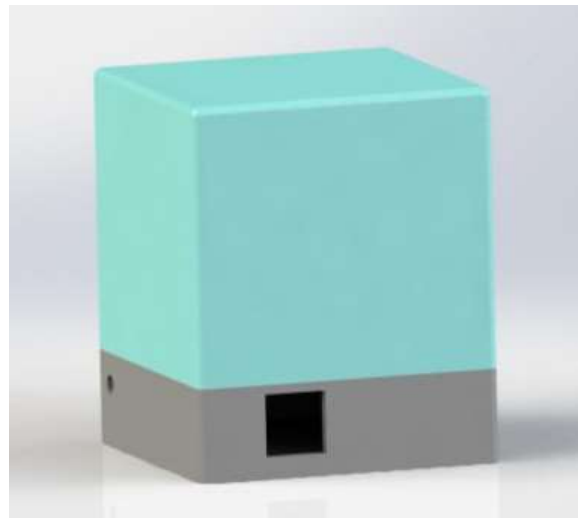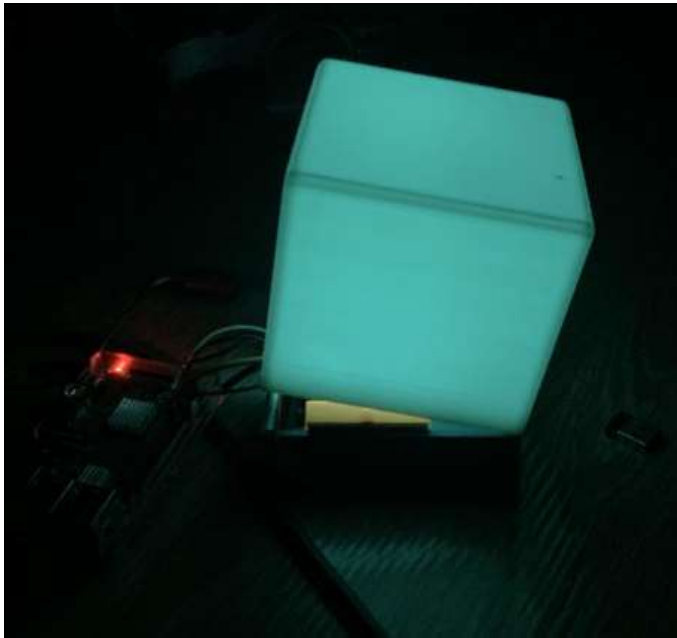
Early Version

Final Version

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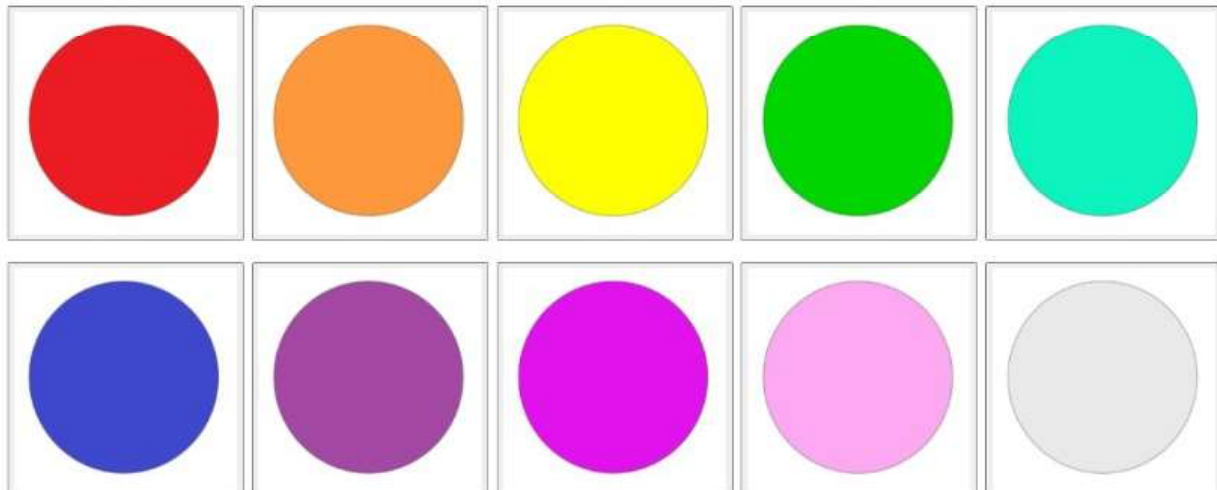
Friendship Lamp

- Developed a program for a Raspberry Pi lamp to connect via Firebase to a buddy lamp and display matching colors in real-time

- Created a website in React to remotely control lamp colors

- Designed lamp case in SolidWorks and 3D printed to house LED strips

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FIRST Robotics, Team 2412: Climb System

- Aluminum extrusion rails driven by chain to lift 150lb robot up a 45cm step

- 6 bearings held in each extrusion to ensure rails stay in correct position and do not bend

- Motor behind bottom bracket to control wheels and move robot forward during climb

- Sheet metal parts made with a waterjet and bent