Taiga Momose

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Education

2nd Year Engineering Physics – University of British Columbia

- **GPA:** 3.95, Dean's List
- **Extracurriculars**: UBC Thunderbikes
- **Key courses:** Circuit Analysis, Experimental Techniques, Principles of Software Construction, Mechanics of Materials.

Skills

Mechanical: SolidWorks, Fusion360, Waterjet Cutters, Power Tools, Drill Presses, 3D Printing
Electrical: Circuit Analysis, Circuit Design, Soldering, Power Electronics
Software: Java, C/C++, Python, Arduino, MATLAB, Excel

Experience

Mechanical Subteam Member Sep. 2024 – Now
UBC Thunderbikes, Vancouver, BC

- Designed new battery cell holders for the upper and lower battery modules, increasing space efficiency by 25% by helping design cell holders which accommodated 30 cells instead of 24 using the same space.
- Created a test stand using SolidWorks for the bike radiator to optimize radiator cooling.
- Performed heat calculations on batteries in Excel to estimate temperature of cooling fluid, contributing to final design of the cooling plates.
- Conducted heat convection calculations for bike radiator to determine the required airflow for effective heat dissipation, contributing to final design of the cooling system.
- Used a waterjet cutter to fabricate a custom torque wrench adapter, enabling the team to accurately tighten battery cells.

Researcher Jun. 2024 – Aug. 2024
UVic Centre for Aerospace Research, Sidney, BC

- Researched emissions analysis techniques through literature providing the team with baseline information for discussing and testing analysis methods.
- Presented findings and reports with potential solutions on a semi-weekly basis to a team of 5 researchers.
- Calculated exhaust gas dilution ratios and expansion ratios using stoichiometric calculations to estimate chamber size for exhaust gas measurements to generate research baselines for further testing.

Team Captain Sep. 2022 – Jun. 2023
Reynold's Reybots, Victoria, BC

- Led team to provincial championships in Surrey, BC and FTC World Championship in Houston, TX, raising $11,200 for 2022-2023 competition season from corporate sponsorships.
- Organized team meetings and mentored junior team members in robot building and administration, leading to a 70% increase in membership retention, and ensuring smooth leadership transition to 2 new captains.
- Created a detailed engineering portfolio of the robot for competition, meeting strict technical communication standards and showcasing the team's engineering achievements.
- Designed and printed components using Fusion360.

Design Lead Sep. 2021 – Jun. 2022
Reynold's Reybots, Victoria, BC

- Led mechanical subteam through chassis and intake design process resulting in 2nd place at provincial championships.
- Used drill presses, mills, hand tools, and welding to fabricate custom components for the robot.
- Developed documentation on chassis, intake, and mechanism design to train junior students.

Bar Staff & Server Sep. 2022 – May 2023
Island Poke Downtown, Victoria, BC

- Handled both customer service and food inventory organization in fast paced environment.

Projects

Autonomous Claw | APSC 101 | Arduino, Engineering Design, Team Management

- Wrote the program for the claw using C which used a touch sensor to detect when the claw was touching the floor to pick up and release objects and ultrasonic sensor as a backup sensor to determine height above the floor.
- Collaborated with a small team to design, prototype, and fabricate autonomous claws using hand tools.
- Designed circuit for the Arduino, servo, ultrasonic, and touch sensor.
  Iterated through multiple design cycles, focusing on testing performance of different sensors.