Kyle Tam

Design Portfolio

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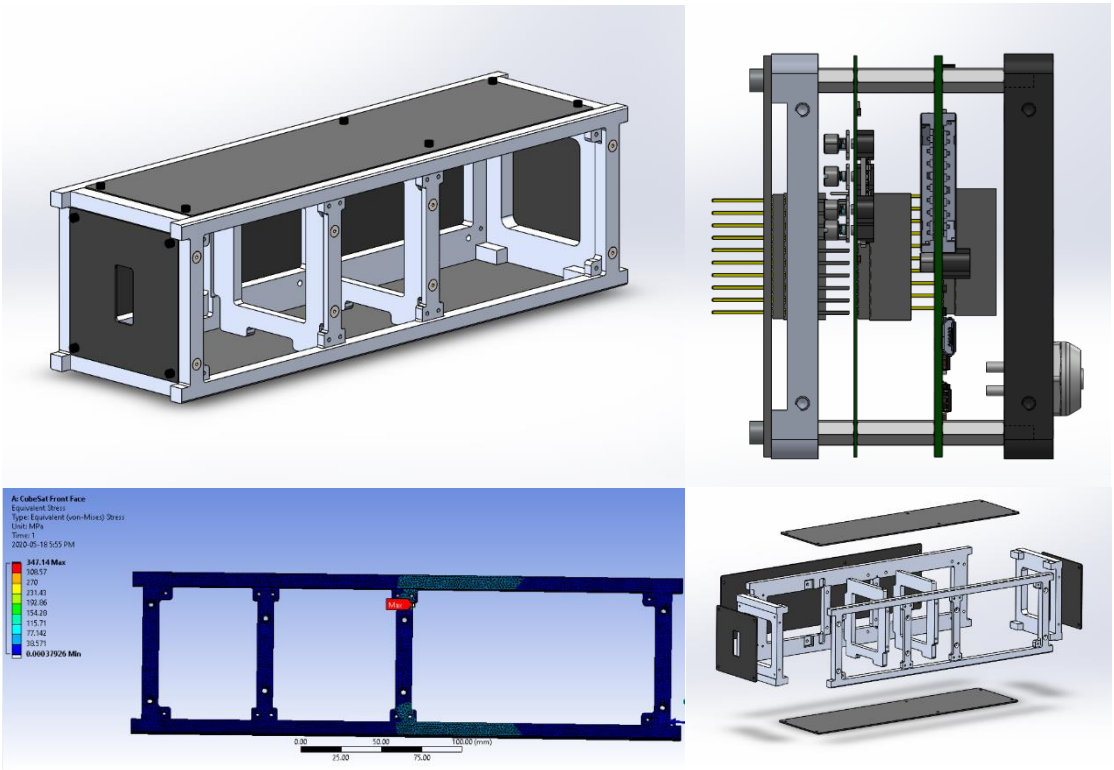
Payload CubeSat Structure and Systems Module

Waterloo Rocketry – Payload (2019 - Present)

- Developed a modular CubeSat structure following the CubeSat Design Specification to house the Payload experiment during transport and execution in rugged desert conditions and rocket flight
- Designed for manufacturing by combining separate components while eliminating complex geometry from previous iterations to facilitate CNC fabrication and lower manufacturing costs by 40%
- Designing an enclosed electrical housing unit to protect experiment PCBs and hardware during flight
- Coordinating electrical, mechanical and research team members responsible for interior module development to incorporate detectors into the CubeSat while delivering critical feedback and hosting iterative design reviews
- Conducting ongoing stress and vibration analysis using ANSYS and SolidWorks to optimize structure geometry and eliminate excess material



Airframe Composite Fabrication

Waterloo Rocketry – Airframe (2019 - Present)

- Conducted a wet, vacuum bag layup to produce a carbon fibre-epoxy fin can and performed three additional tip-to-tip layups to adhere carbon fibre plated fins onto the cylinder
- Collaborated with a team of 5 students to research and manufacture a wet, vacuum bag layup using fibreglass-MDF negative moulds to produce a fibreglass-epoxy nosecone with a Von Kármán shape and a 4:1 fineness ratio optimized for transonic flight

Recovery Avionics (Electronics) Module

Waterloo Rocketry – Recovery (2019)

- Designed the recovery avionics section to be placed within the nosecone of the rocket, negating the need for an additional body tube and decreasing the volume of the recovery section by 16% compared to the year before
- Developed and machined an aluminum bracket and bulkhead to accommodate the threaded rod attaching the nosecone tip and the bulkhead to prevent potential shearing near the electronics
- Collaborated with the electrical team to integrate electronics within the avionics section while balancing rigorous component height restrictions due to the conical shape of the section and the inclusion of a drogue parachute

CubeSat End-Face

Waterloo Rocketry – Payload (2018)

- Designed an end-face following CubeSat Design Specifications
- Collaborated with the rest of the Payload design team to integrate the part into the master assembly while minimizing future mate errors
- Drafted the CubeSat end-face following GD&T and ordinate dimensioning standards