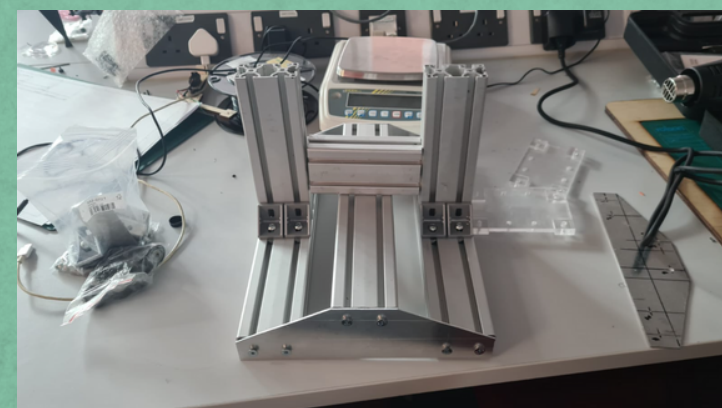
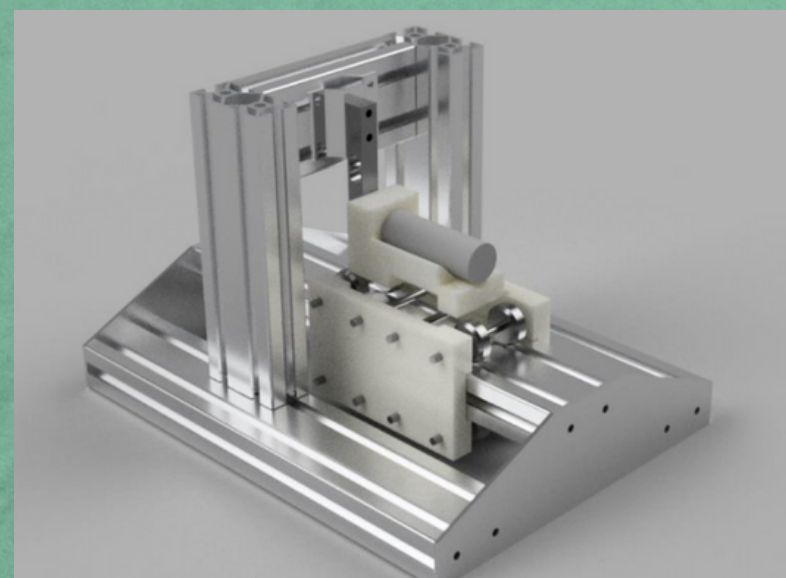


Name Rhithika Srinivasan
Department Aerospace Engineering
Project title Development and instrumentation of a rocket test bench
Supervisor Dr. Simon Hayes
Mr. Daniel Horner
Role title Research Student



Step 1: Manufacturing and assembly

- Aluminium rails used for the test stand
- Measured and manufactured plates, frame, and load cell bracket based on the CAD design
- CNC machined the carriage for the rocket motor holder
- 3D printed the motor holder using epoxy resin
- Manufacture and assembly at iForge



Step 4: Data collection and analysis

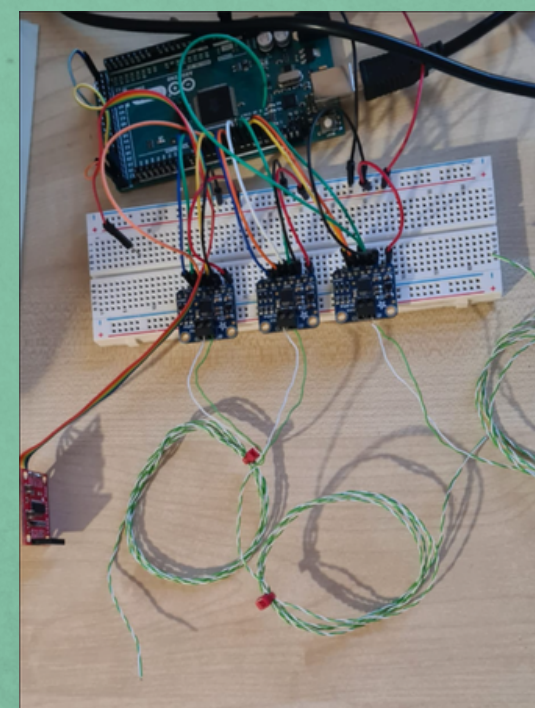
- Although the data was not acquired, this step ensures that the data analysis shows which of the experimented rocket motor is efficient for the level of educational purposes.

Project objective and requirements

- To test a solid- fuel rocket, develop a rocket test bench, and record measurements of thrush, temperature, and weight at specific conditions.
- Present and use for STEM education and upcoming Y1 Aerospace Engineering students
- The project was carried out in 4 stages as explained here

Step 2: Avionics, circuit, coding

- Microcontrollers- Arduino mega 2560, thermocouple type- K type, thermal amplifier- Max31856, loadcell- 50kg, loadcell amplifier- sparkfun HX711
- Combination of codes included for the loadcell calibration, load cell output, & temperatures of 3 thermocouples.



Step 3: Test- Jet lab

- The model was tested at the iForge multiple times to analyse effect of wheels friction on performance.
- Testing with rocket motor was not carried out due to delay in the test approval at the lab.
- Lab not in desired conditions for testing.