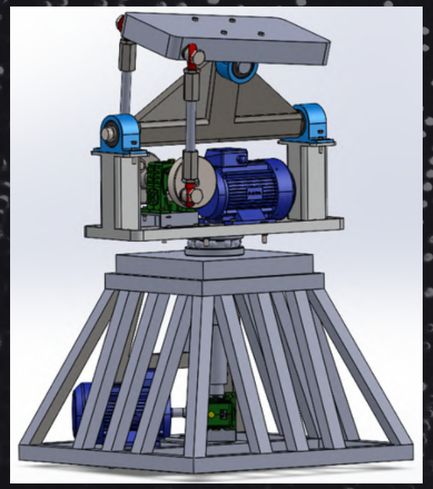
JEREMY CHUNG

PROJECT PORTFOLIO

HANDS ON MECHATRONICS ENGINEER











DESIGN | PROTOTYPE | TEST | ITERATE

SUBVISION

SEPT 2025 – PRESENT

A SUBSEA ROV FOR
CLEANING BIOFOULING
FROM FREIGHT SHIP HULLS

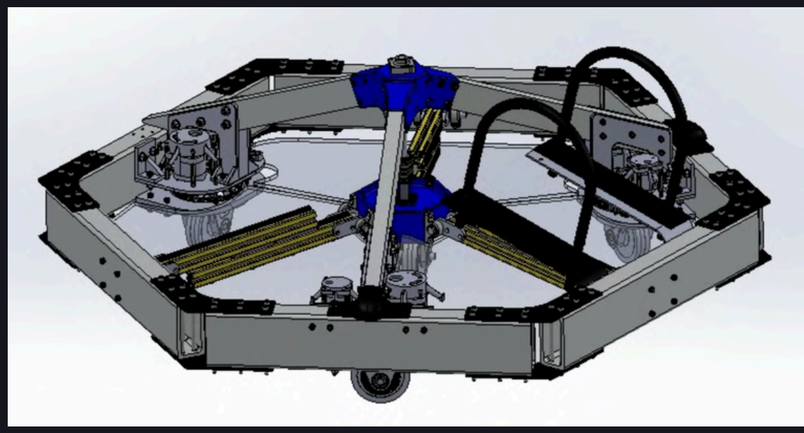


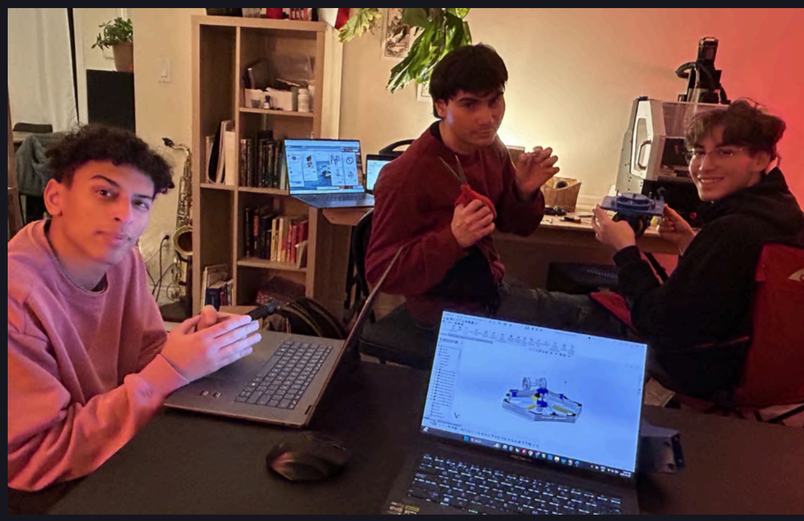
KEY ROLES

Mechanical design, Machining, Assembly

ACCOMPLISHMENTS

- Design and Machining of Zima main hex frame tubes and brackets, providing base for teammates' future contributions
- Material selection for undersea robotics
  - Determined need for sacrificial anode on assembly containing aluminum and stainless steel in seawater



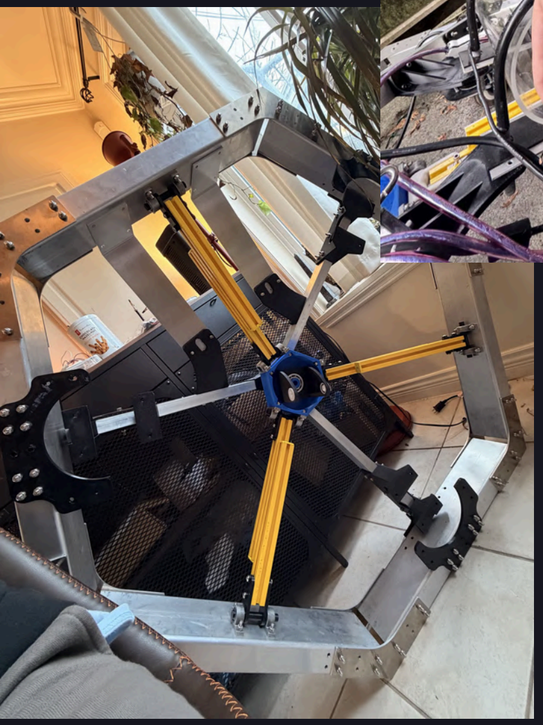


SUBVISION

CONT'D

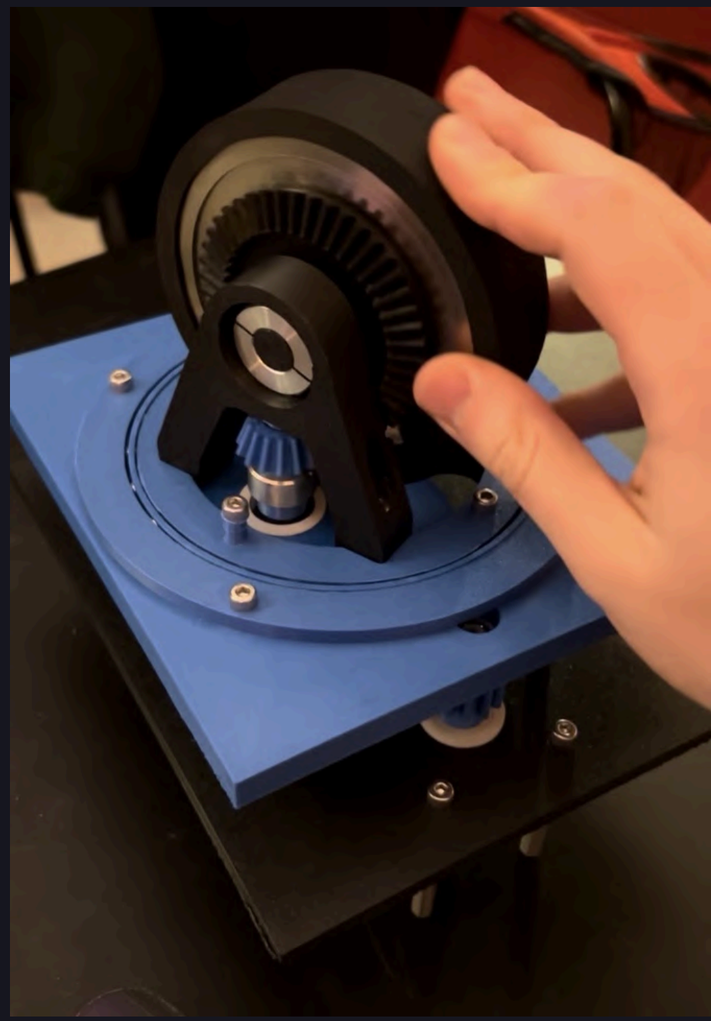
AN AUTONOMOUS ROV FOR CLEANING BIOFOULING FROM FREIGHT SHIP HULLS





ADDITIONAL ACHEIVEMENTS

- Assembly of swerve drive incorporating Blue robotics T200
- Wiring and JST cable crimping for custom designed encoder PCB
- More design, testing, and integration in the coming months



ROBOMASTER

JAN – APR 2025

Robomaster Website

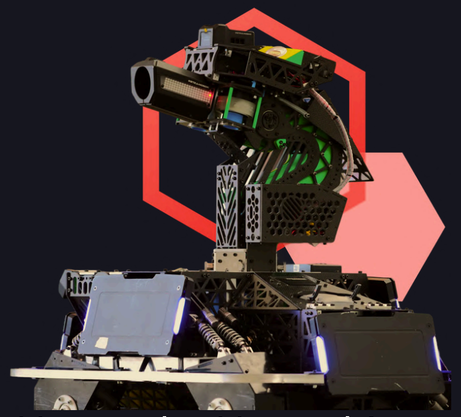
CV ENABLED SENTRY TANK FOR 5V5 BATTLE ROBOTICS







PU Resin Wheels Mould v1–3. Thick walls required machining to remove



Hero – the Heavy hitter



Jeremy + Edison bend frame bars



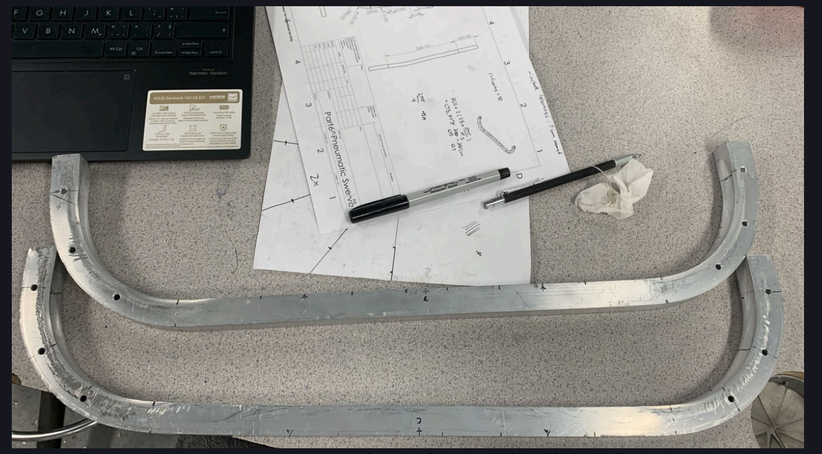
Mould v4 utilized 2 3D printed walls for easy peel away with hand tools

KEY ROLES

Mechanical design, Machining / Printing, Assembly

ACCOMPLISHMENTS

- Machined bumper tubes
- Wheel mould design + PU casting
- Ball path ramp Design



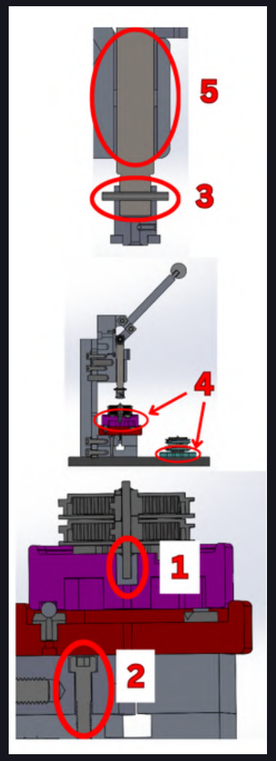
Bent bumpers I had to drill holes into, accounting for warpage tolerance

KARDIUM

MAY – DEC 2025

A SCANNING AND ABLATION DEVICE FOR ARRYTHMIA, WHICH AFFECTS 5% OF THE POPULATION





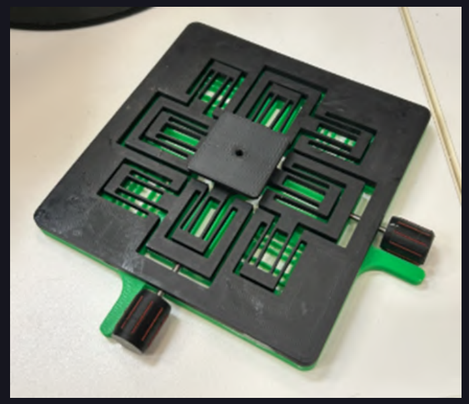
MECHANICAL DESIGN CO-OP

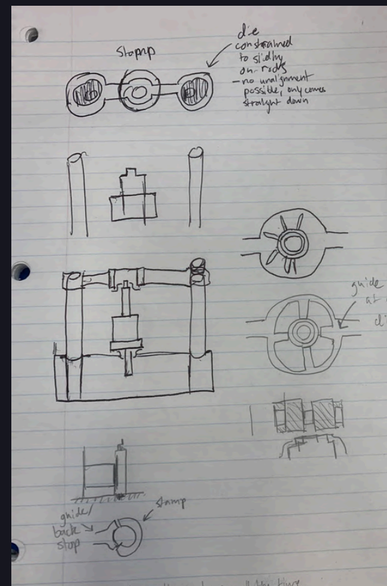
SolidWorks CAD, CAM, FEA. HAAS CNC Milling + Turning, Laser cutting

PUSH RING JIG

- Redesigned a shaft alignment fixture for ISO Class 7 medical-device manufacturing, achieving 26 µm concentricity.
- Traced setup problems to clearance-induced slop; simplified centring and reduced scrap from ~1 in 3 to ~1 in 30.
- Performed tolerance stack-ups across ~10 moulded components; specified fits, tolerances and materials for machined tooling.







KARDIUM

MAY – DEC 2025

A SCANNING AND ABLATION DEVICE FOR ARRYTHMIA, WHICH AFFECTS 5% OF THE POPULATION







MECHANICAL TESTING

- Designed a custom Lloyd test fixture to investigate push ring failure during installation.
- Used transparent resin prints and magnified imaging to observe installation behaviour and identify failure modes.
- Tested 50+ samples and analyzed force–displacement curves to characterize mechanical performance.



KARDIUM

MAY – DEC 2025

A SCANNING AND ABLATION DEVICE FOR ARRYTHMIA, WHICH AFFECTS 5% OF THE POPULATION



MOPA LASER ENGRAVING

- Developed jigs and test procedures for a MOPA fibre laser, including mounts and a distance-calibration tool.
- Tested hundreds of parameter grids across ~10 materials; evaluated IPA resistance, abrasion and oxidation.
- Wrote SOPs, training videos, and personally trained 3 engineers





AGROMOTION

SEP 2025 – PRESENT

AUTOMATED FERTILIZER DOSING SYSTEM





Problem Statement: Agrotek's fertilizer production process utilizes repetitive manual labor and exposes workers to ariborne particulate. They have little floor space for an OTS solution

KEY ROLES

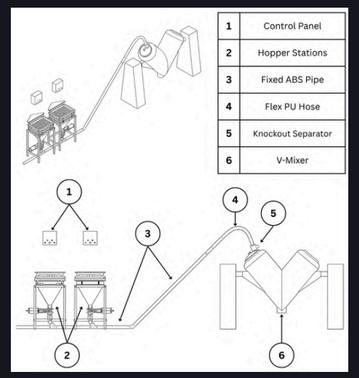
Team Lead, Project Management, Led Critical Design Reviews, Budgetting, Professional communication

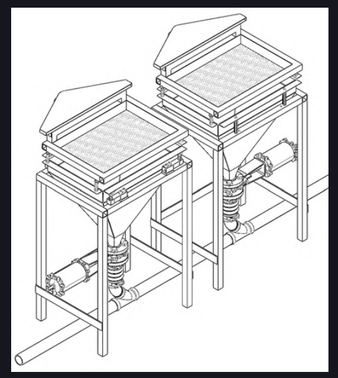


Wiring for Control Panel

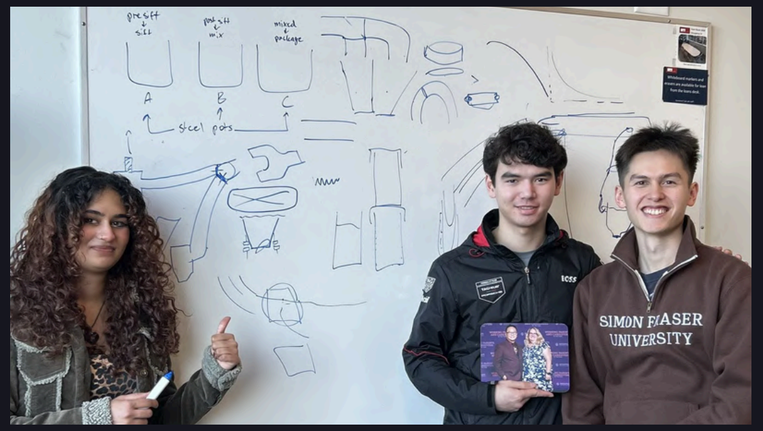


Hopper at demo day





Solution: AgroMotion designed and is commissioning a custom sifting, dosing, and vacuum conveyor system



CDR where we discussed potential powder elevator approaches

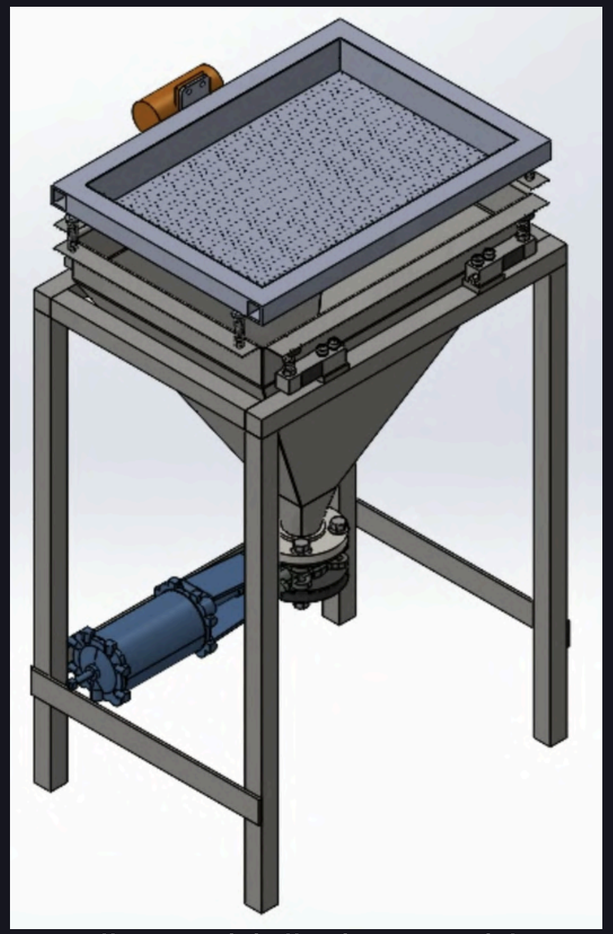


Led the Team for 8 months of Capstone, Continuing now as paid contractors!

AGROMOTION

SEP 2025 – PRESENT

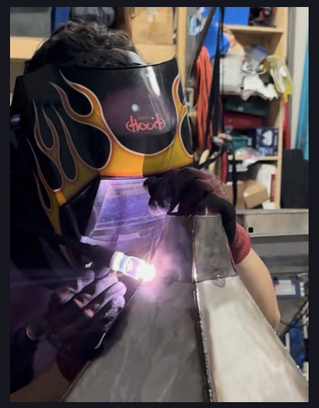
AUTOMATED FERTILIZER DOSING SYSTEM



Personally moddelled assembly containing 40+ components to ensure attachment points and constraint were fully thought out

KEY ROLES

Team Lead, Siemens PLC Wiring + Programming, Mechanical design and fabrication





Cutting, Grinding, and Polishing. Welding support for our custom built hopper.



Wired, debugged, and Programmed Siemens PLC Control System utilizing analog pneumatic knife gate



System reads loadcells, displays live powder weight on LC meter, and dispenses 8 kg repeatedly ± 0.1 kg