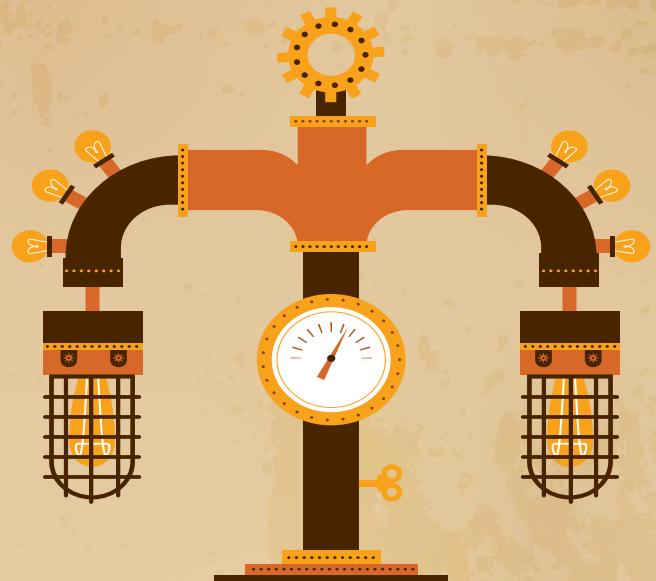


MISSILE GUIDANCE SYSTEM

Aarathi Devakumar, Aarav Jain,
Brandon Bae, Ryo Kato

PROBLEM STATEMENT

- ★ Limited precision in adverse weather conditions
- ★ Dependency on satellite-based systems (prone to disruptions)
- ★ High costs with traditional systems



SOLUTION

- ★ Arduino based navigation motion system
- ★ Input integration for environmental adaptability
- ★ Modular design for scalability and cost-effective

HACKATHON TIMELINE

- ★ Picked up various hardware items
- ★ Discussed ideas

BRAINSTORM



DESIGN

- ★ CAD Sketches
- ★ Learned how to use arduinos

BUILD



TEST/PRESENT

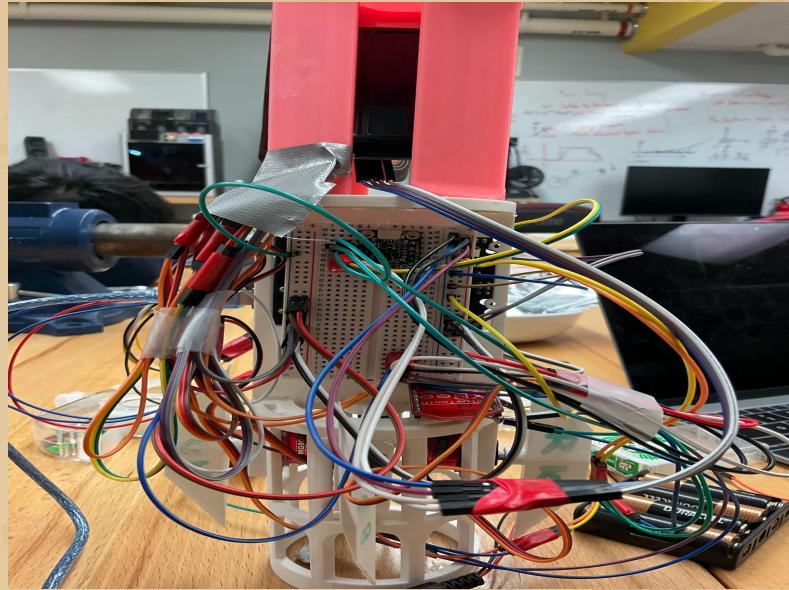
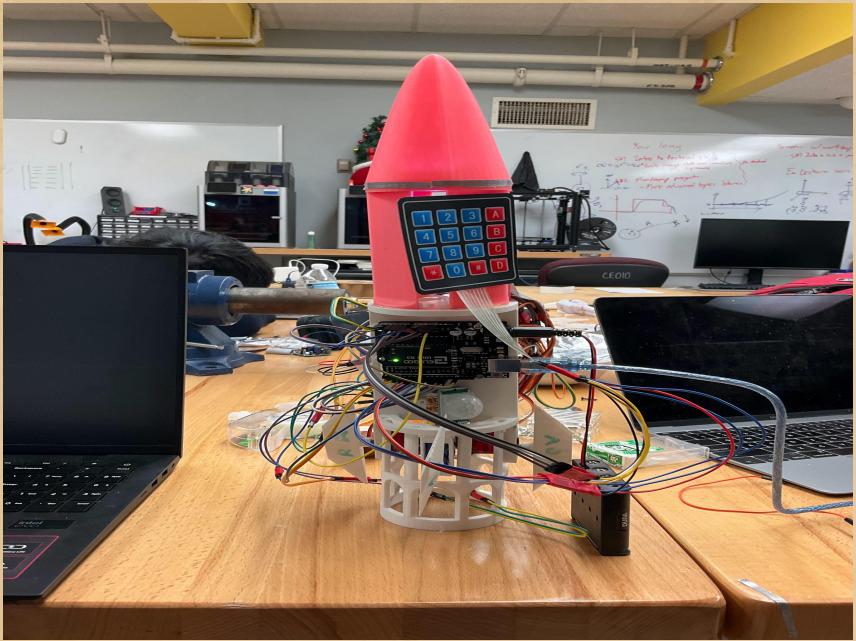
- ★ Software Testing and Troubleshooting

MATERIALS USED:

- ★ Breadboard
- ★ Arduino Uno
- ★ IMU
- ★ LCD
- ★ PIR Motion Sensor
- ★ Xbee Bluetooth Sensor
- ★ Number Pad
- ★ PLA 3D Prints
- ★ 3 MG90S Servos
- ★ 1 SG90 Servo
- ★ Wires

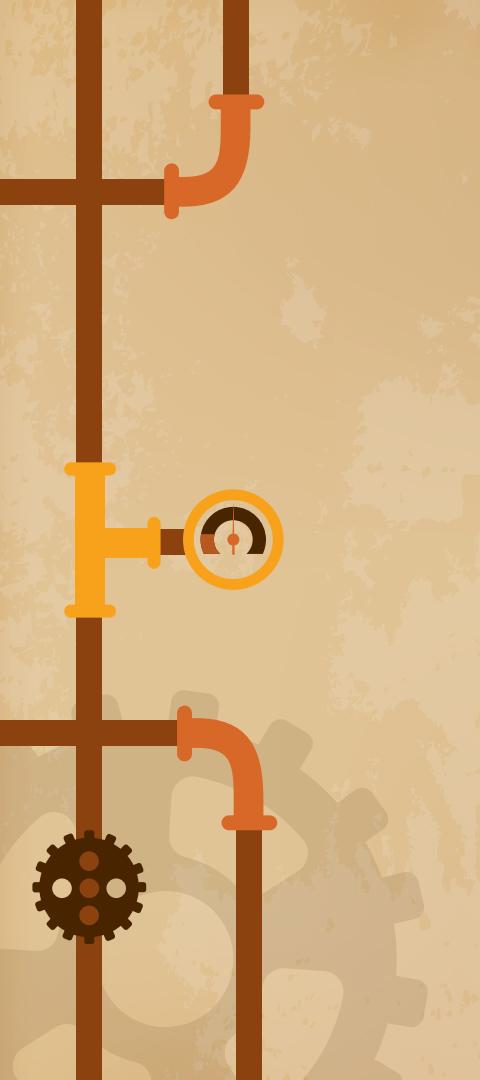
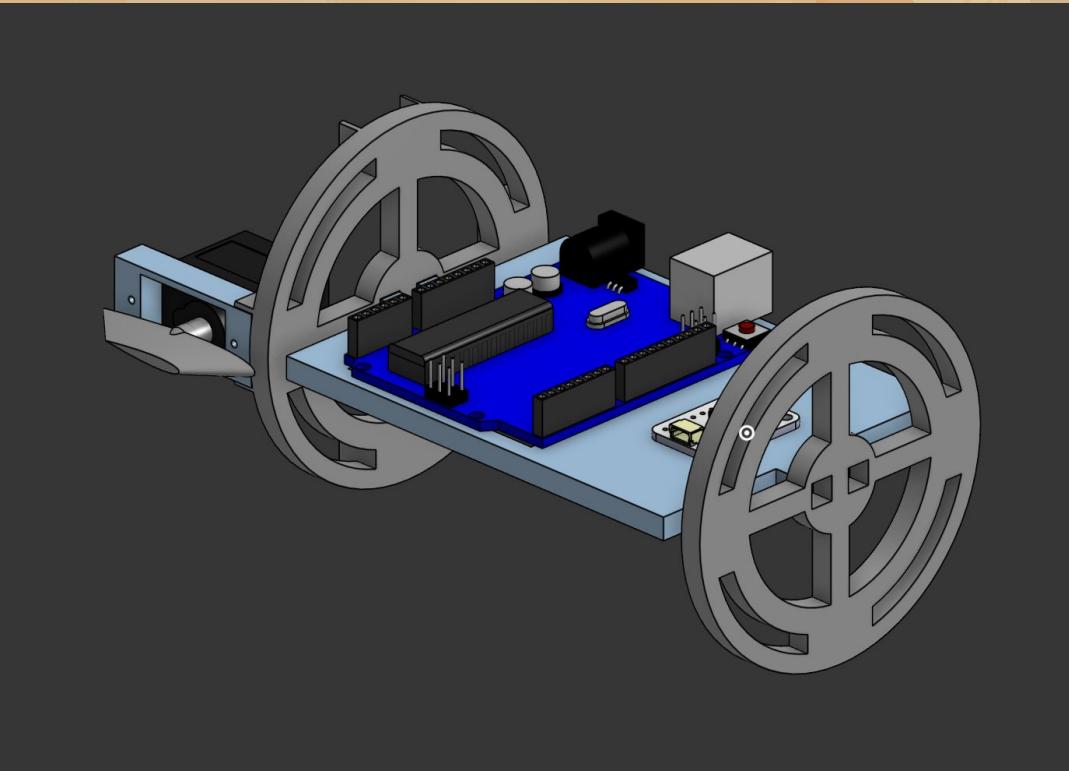


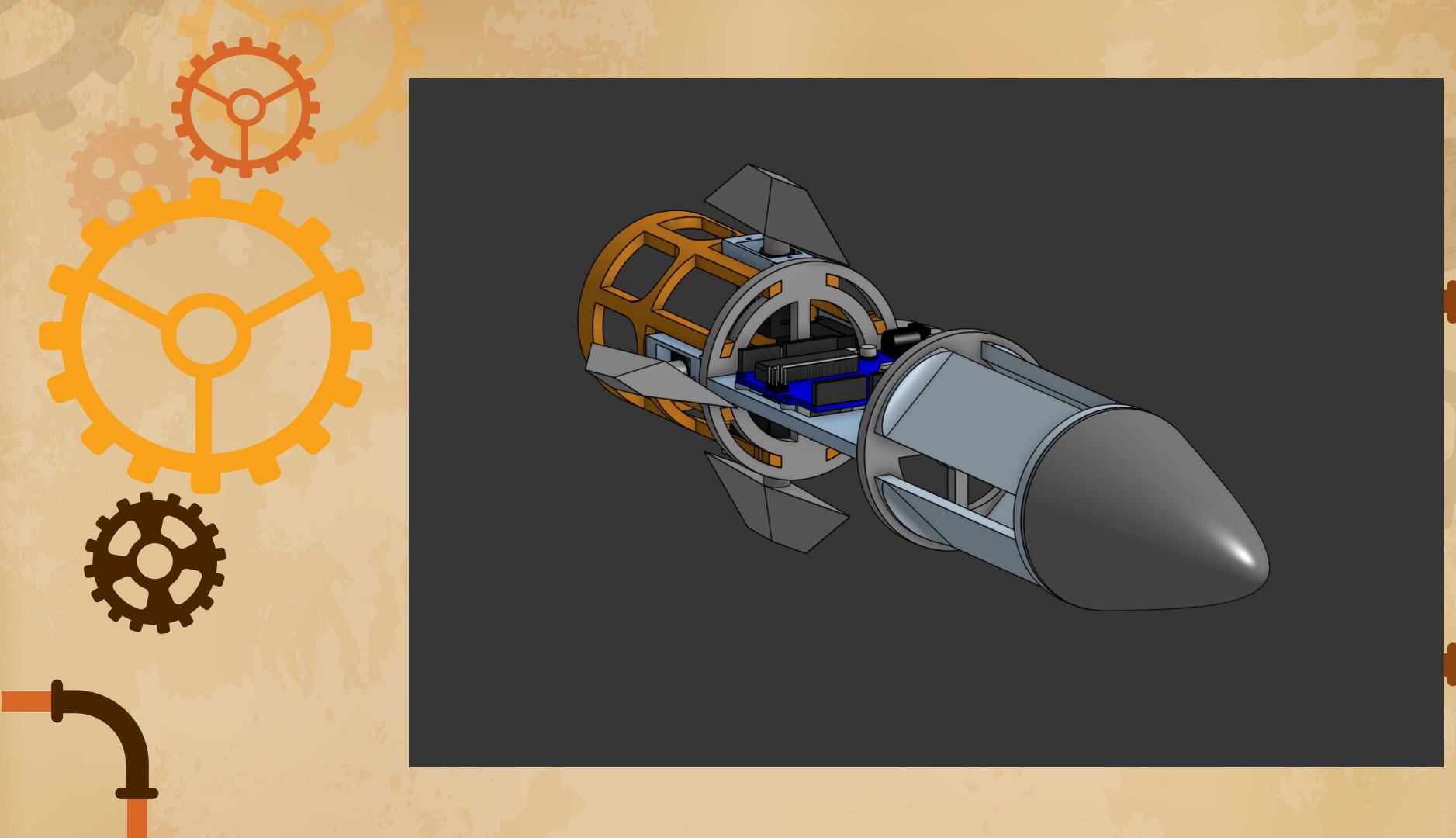
THE ARDUINO SIDE (LAYOUT):

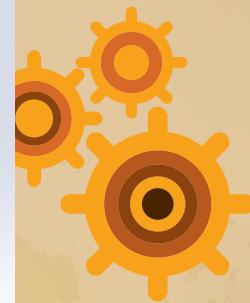
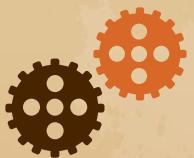
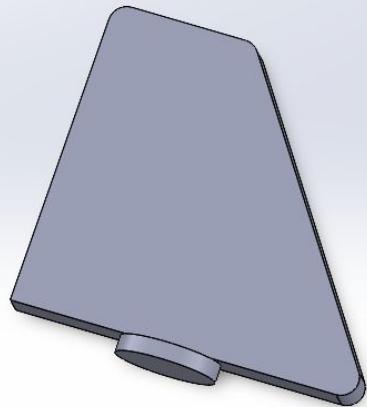


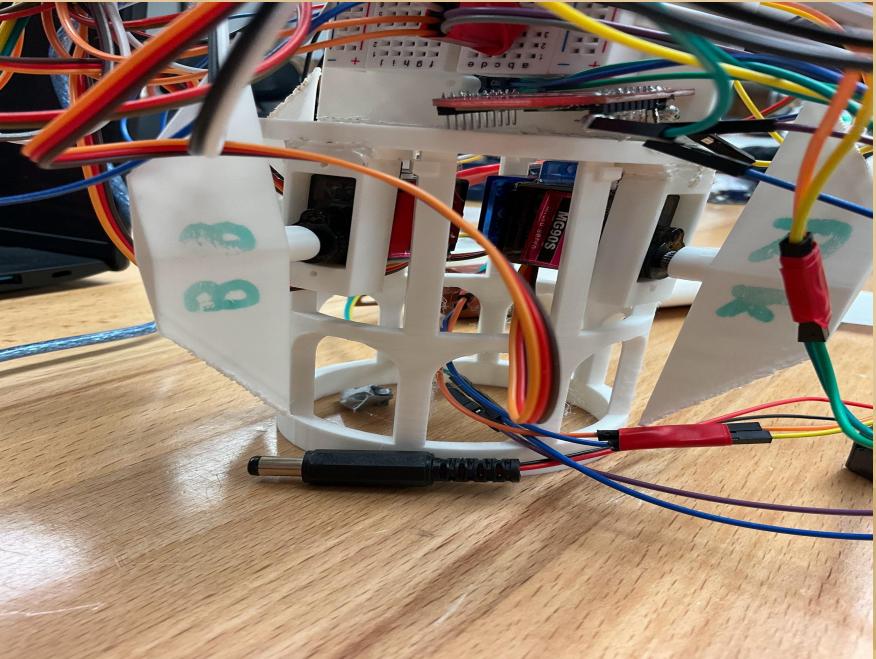
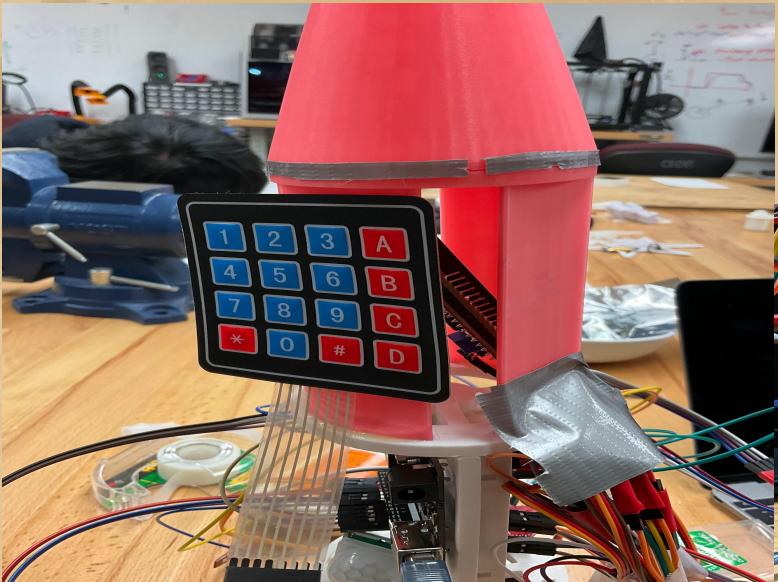
CHALLENGES ENCOUNTERED:

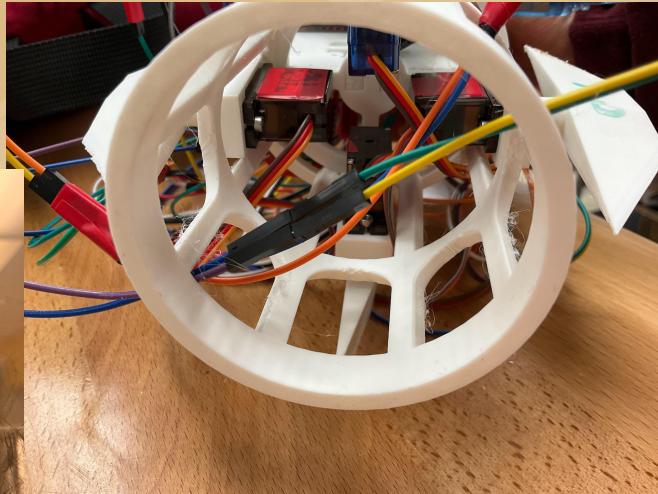
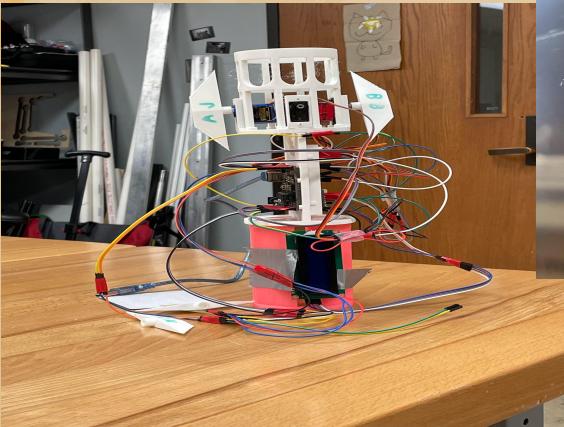
- ★ Rotation data difficulty
- ★ Difficulty sending IMU data to the Arduino
- ★ Wiring
- ★ Difficulties with Bluetooth Connectivity
- ★ Initially tried 9V battery as power source and temporarily burned the LCD screen











USE CASES



COMMERCIAL

- ★ High-precision drone delivery systems



SPACE EXPLORATION

- ★ Enhanced navigation for orbital corrections

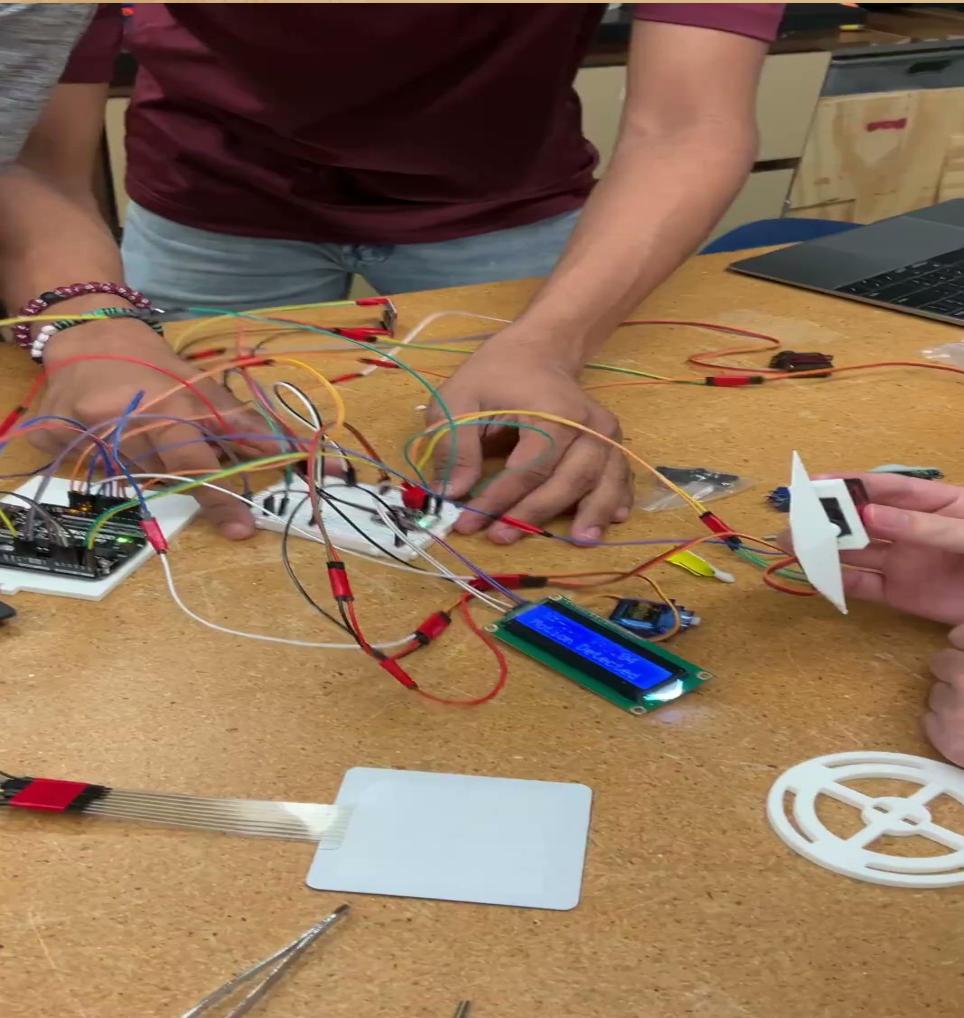


DEFENSE APPLICATIONS

- ★ Targeted missile systems with higher precision
- ★ Reduced collateral damage



TEST DEMOS



Brandon (CPSC '28)



OUR EXPERIENCE

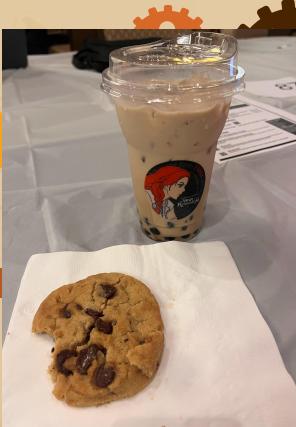
Ryo (MEEN '28)



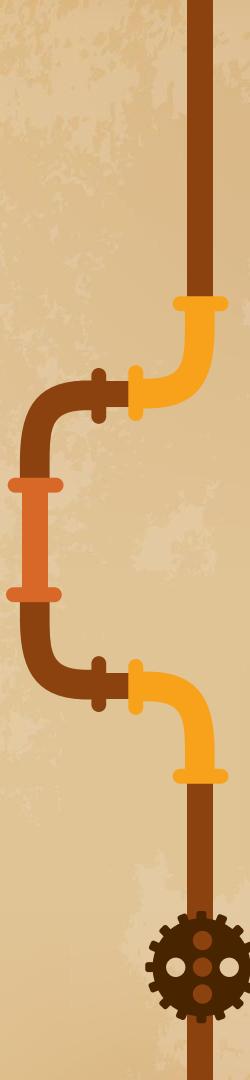
Aarathi (MEEN '28)



Aarav (ELEN '28)



CONCLUSION



Our missile guidance system combines cutting-edge technology with practical applications to redefine precision and reliance in missile guidance systems.

Thank you so much, and Gig' Em!

