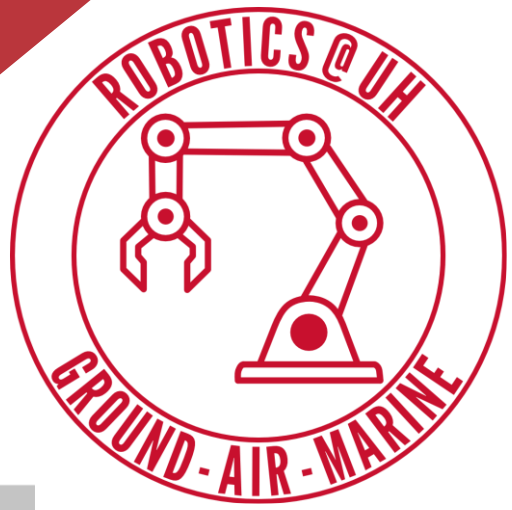
Robotic Arm Project

Open Meeting – 9/18/25



Meet the Project Leads

Tyler Martelon

B.S. Electrical Engineering
Junior

Ethan Bush

B.S. Electrical Engineering
Senior

Jonathan Gaucin

B.S. Electrical Engineering
Senior

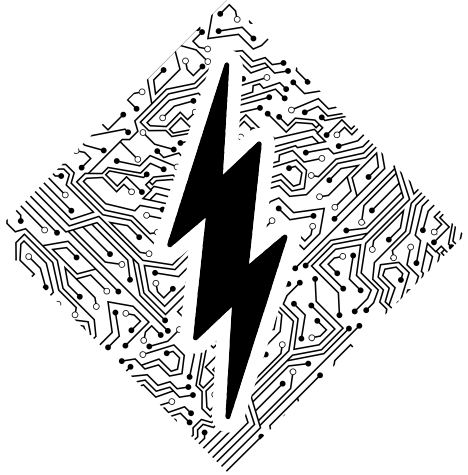
Sahran Ashoor

B.S. Computer Engineering
Junior

Project Overview

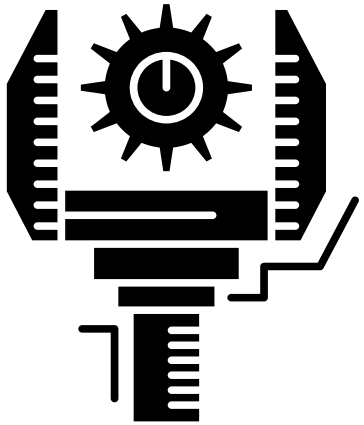
- Design and construct a 6 DOF robotic arm with at least a 1kg lifting capacity.
- Start simple with off-the-shelf components
- Aim for a project cost under $5k per arm
- Utilize Machine Learning and AI concepts analogous to an industrial use case
- Work between teams to refine design over time

Team structure - Hardware



Electrical Sub-Team

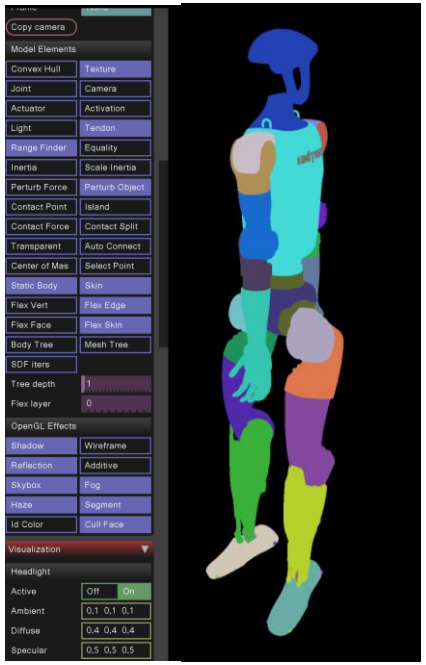
- Responsible for design and integration of electronics
- Handle low level firmware programming
- Ensure proper power delivery



Mechanical Sub-Team

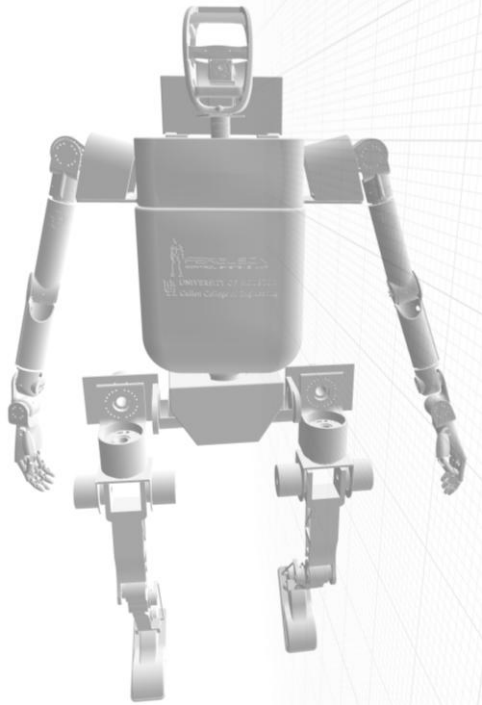
- Responsible for design of the arm's physical structure
- Use CAD and simulations to verify designs
- Make cost-effective design choices

Team structure - Software



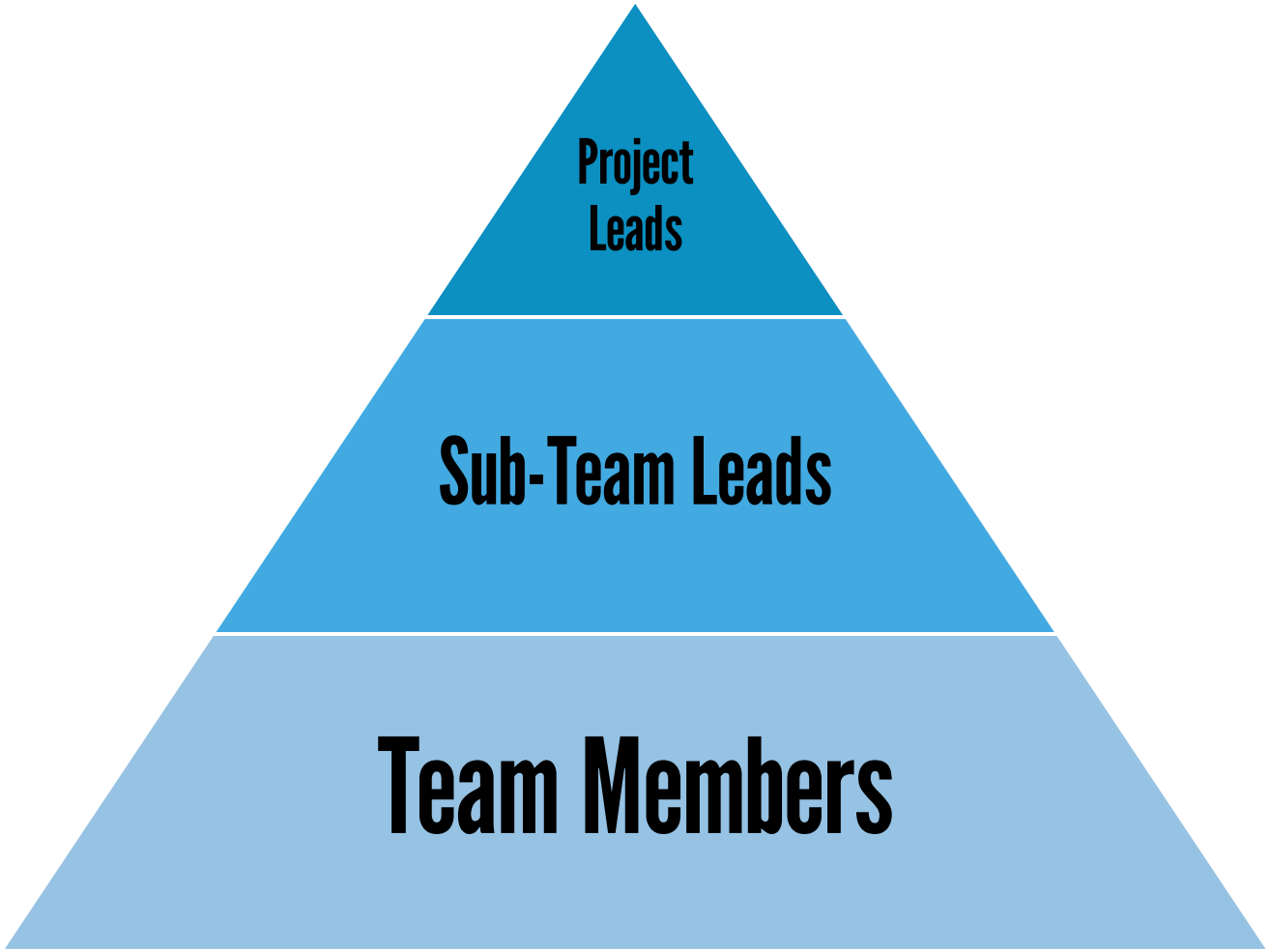
Simulation Sub-Team
(2+ leaders needed)

- Create digital twin (.urdf) in simulation environment
- Handle joint + kinematic logic
- Deliver optimal tech-stack for motion planning, action scripting, etc.
- Emulate sensor logic for intelligent training
- Perform successful Sim2Real transfer



Team structure cont.

- Sub-Team leads will be responsible for keeping the sub-teams operating in order
- These positions will be assigned when we have a better idea of everyone's ability
- Project leads will hold the final say on any decision
- Any disagreements between teams or team members should be brought to the project leads



Rough Timeline

Hardware

- Team Acclimation, Rough Planning
- Design Initial Prototype(s)
- Refine Prototype Till Build Ready
- Build First Prototype, Collect Software Feedback
- Improve Gradually With Each Iteration/Change

Software

- Team Acclimation, Rough Planning
- Develop Digital Twin // Assist with Firmware
- Refine Digital Twin in step with Hardware
- Deploy software for physical prototype
- Improve software, keep up with physical design changes

Icebreaker!