

CORNELL HYPERLOOP

NEWSLETTER



Issue 001

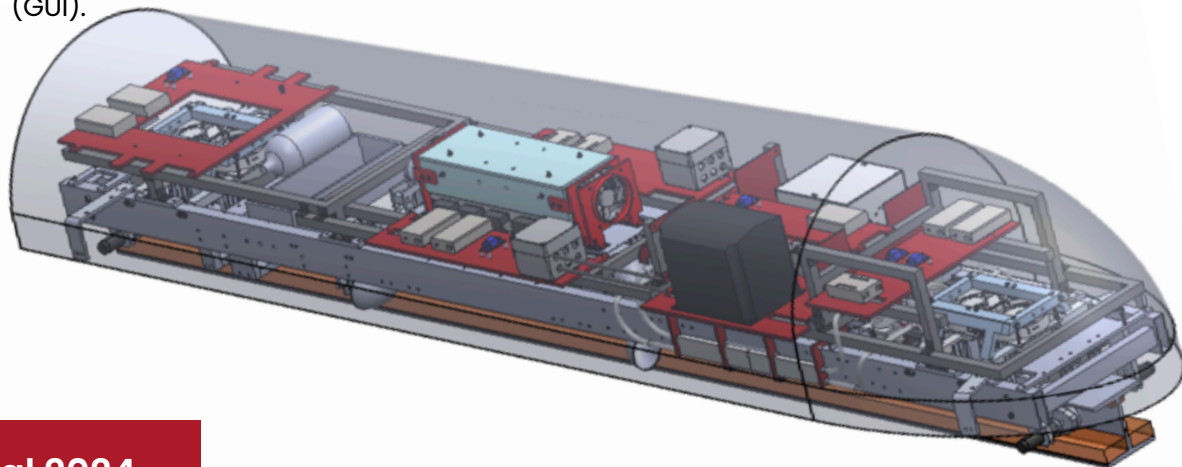
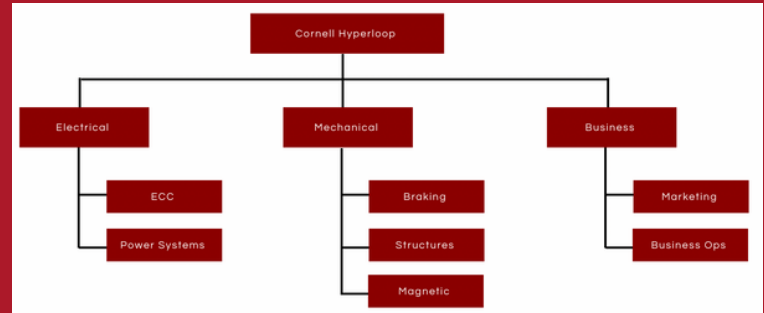
Fall 2024/Vol. 001

What's Going On in Our Pod...

Mechanical Team: This year, the Mechanical team is focusing on scaling up the propulsion system and developing a DC electromagnetic levitation system for static levitation—even at zero speed—a potential first in the competition. Efforts are underway to refine magnetic braking and pneumatic systems for enhanced efficiency and compactness, advancing us toward a fully automated pod and setting new standards for Hyperloop technology.

Electrical Team: Enhancing system control and power reliability with a Variable Frequency Drive (VFD), custom battery circuitry, an emergency power-off system, and a fully digital Graphical User Interface (GUI).

Our Team



Hyperloop Global 2024



Fabrication and Testing Ahead

Updates: The Mechanical team is advancing key systems, including guidance, aeroshell, and braking. They aim to complete the **pneumatic braking system** for smoother stops, test a **switchable magnetic braking system**, and build a **levitation test rig** to refine control.

Next Steps: Subsystem testing and manufacturing the **carbon fiber aeroshell** and **battery pack**.



Want to Keep Up With Cornell Hyperloop?

instagram: @cornellhyperloop

<https://www.cornellhyperloop.com/>

email: cornellhyperloop@gmail.com

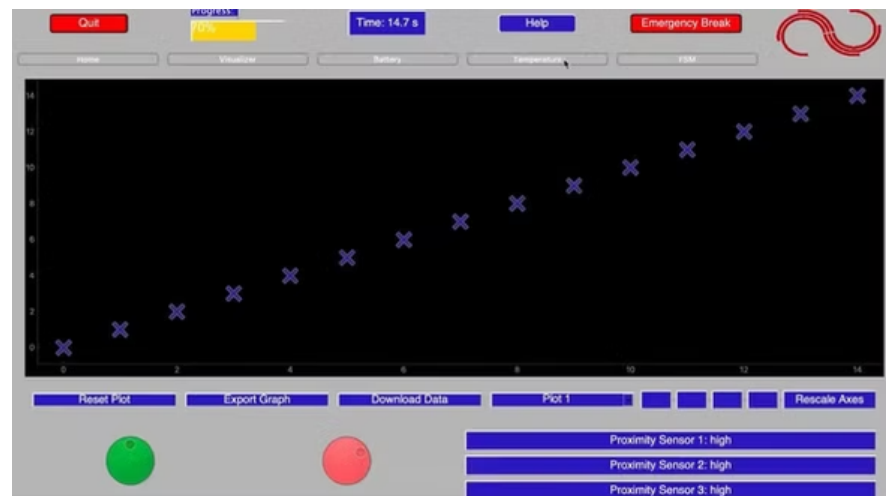
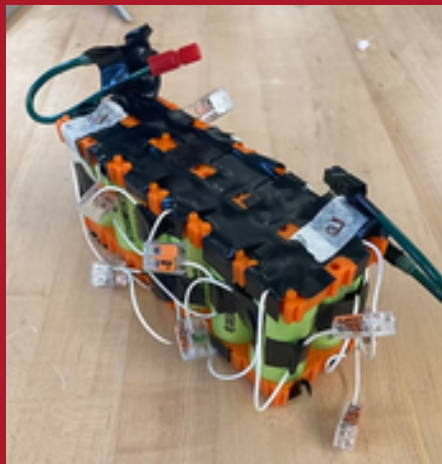
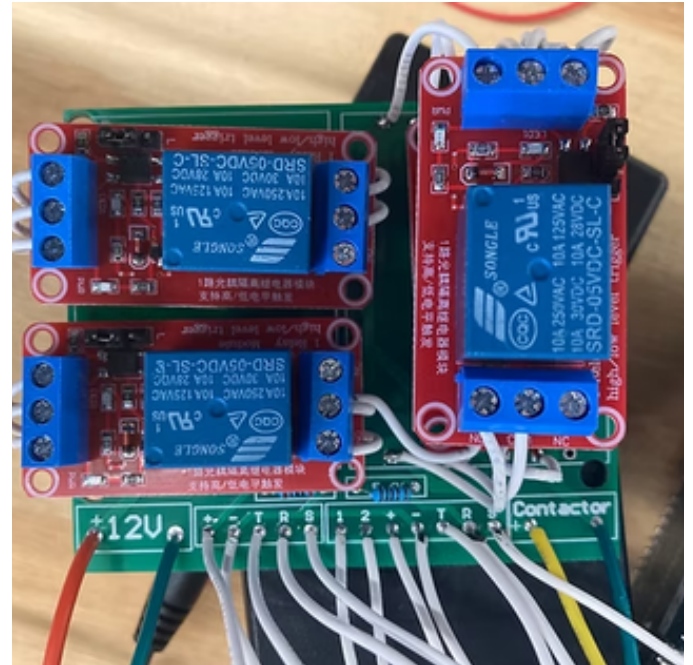
Electrical Team

Power Systems Sub-Team

Manages low and high voltage power supply, including sensors, microcontrollers, and propulsion systems. Ensures safety with Emergency Power Off (EPO) circuits and a Battery Management System (BMS).

Current Projects:

- Design 325V, 25A LiFePO4 battery pack for propulsion
- Develop custom PCBs for EPO circuits
- Implement high-voltage BMS for monitoring and protection



ECC Sub-Team

Oversees embedded software, sensor data acquisition, and communication, enabling pod automation. Develops user interfaces and communication protocols for monitoring and control.

Current Projects:

- Automate Variable Frequency Drive (VFD)
- Redesign GUI for subsystem automation
- Improve wireless communication system

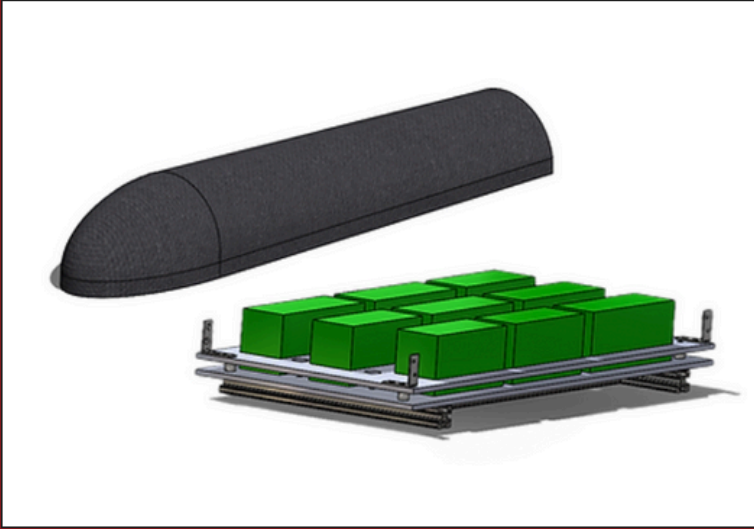
Mechanical Team

Structures Sub-Team

Designs and fabricates the Hyperloop pod's chassis, aeroshell, and enclosures for electronics, ensuring structural integrity and safety. Collaborates with Electrical teams for secure mounting of components.

Current Projects:

- Redesign battery pack enclosure
- Manufacture new aeroshell
- Mount Battery Management System (BMS)

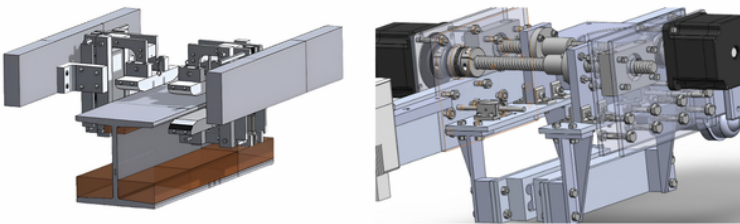


Braking Sub-Team

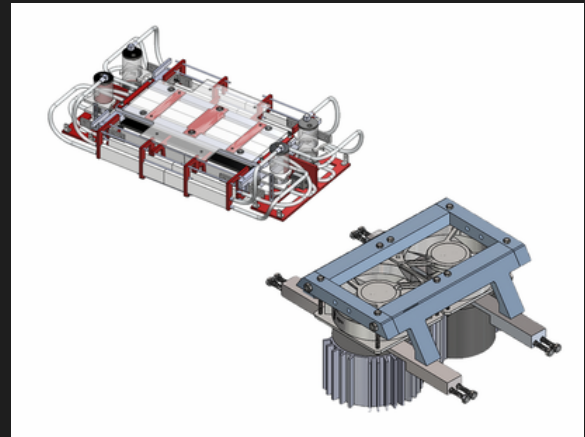
- Develops pneumatic, electromagnetic, and frictional brakes for the pod. Focuses on speed-dependent braking systems, with future goals for regenerative braking and tank refilling during operation.

Current Projects:

- Automate pneumatic brake system
- Develop electromagnetic brake concept with magnetic field redirection
- Optimize brake design for mass and manufacturability



Magnetic Sub-Team

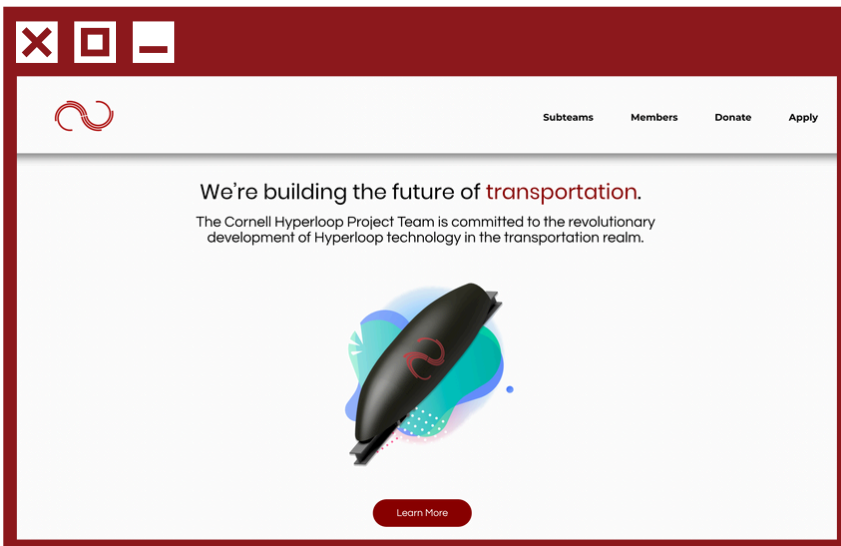


Focuses on magnetic levitation, propulsion, and horizontal guidance using electromagnets, linear induction motors, and control systems to improve pod stability and speed.

Current Projects:

- Develop scaled pod for static levitation
- Test transformers for saturation and permeability
- Build rig to measure electromagnet force output
- Increase power to LIM for higher thrust
- Revise horizontal guidance for stability in roll direction
- Improve flywheel test rig for faster speeds

FALL 2024



BUSINESS TEAM

Marketing Sub-Team

The Cornell Hyperloop Marketing team builds the brand, expands the network, and shares the team's story. They highlight innovation and technical achievements, bridging engineering and public engagement through social media, outreach events, and strategic communications, connecting with supporters, sponsors, and alumni passionate about hyperloop technology.



Boost social media engagement with diverse, multimedia content showcasing team progress and culture.



Strengthen alumni and partner relationships through regular updates and involvement opportunities.



Launch a newsletter to keep supporters informed and connected.



Business Operations Sub-Team

The Cornell Hyperloop Business Development team is key to securing resources that drive the mission forward. They focus on raising capital, organizing events, and creating fundraisers to support innovative projects. The team cultivates partnerships, manages budgets, and works strategically to position Cornell Hyperloop for success and growth.

Current Projects

- Organize fundraisers to generate sustainable revenue and high-impact financial support.
- Secure corporate sponsorships aligned with Cornell Hyperloop's mission and innovation goals.
- Identify and coordinate events to showcase team milestones to investors and the public.

Crowdfunding:

