



Uplink Robotics Construction Platform



Team Members:

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Introduction

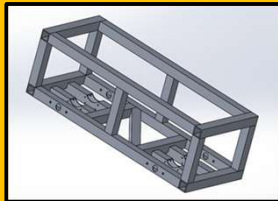
The Heavy Lift Construction Platform (HLCP) is a senior design project with Uplink Robotics LLC to improve material transport efficiency and safety on construction sites. Design work focuses on redesigning the earlier prototype to fix key issues, including frame flexure, drivetrain reliability, and surface damage from the wheels.

Critical Requirements

- Max payload of 250 lb. with a minimum speed of 3 mph at full power.
- Must run at full power for at least one hour under max payload.
- Rigidity of frame under max payload.
- Must use skid steering to ensure maximum maneuverability in tight spaces.
- Must travel on carpet and hard surfaces without leaving marks or damage.
- Must withstand a 50 lb concrete bag dropped from 2 ft and a max-speed impact against a hard surface.

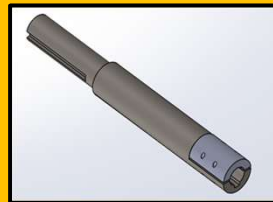
Frame

Fully welded 6061 T6 Aluminum frame with integrated motor mounts



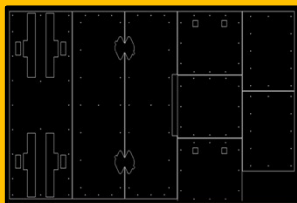
Custom Axles

Two-part axles to facilitate keyway machining



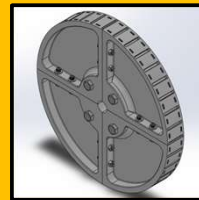
External Paneling

Water jetted 1/4" HDPE sheeting for external panels



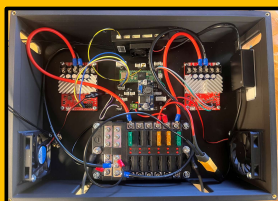
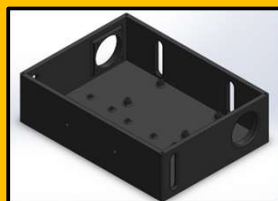
Non-Marking Wheels

3D printed wheels with custom molded non-marking rubber tires



Electrical Box

Redesigned to accommodate updated control board and incorporate a LiDAR obstacle avoidance system



Assembly

Fully assembled construction robot platform

