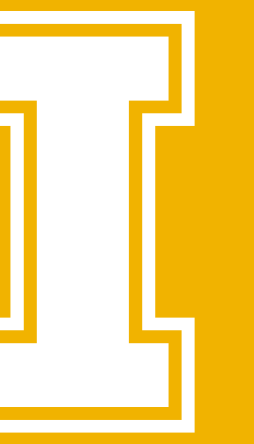


TRACKED FORESTRY RESEARCH ROBOT

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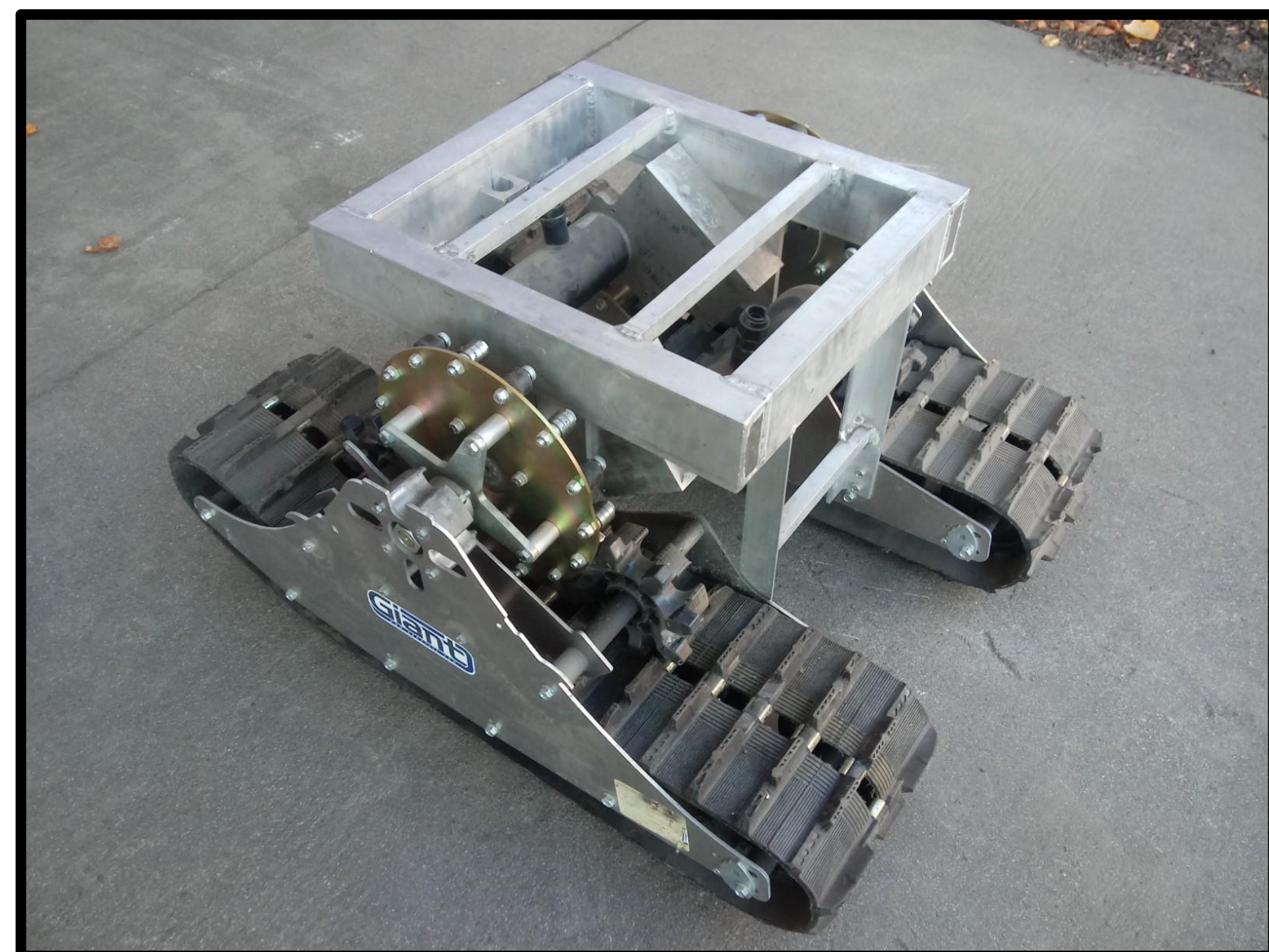


OBJECTIVE

Develop a fully electric, remotely-operated vehicle to perform brush clearing operations and provide a basis for future research.

BACKGROUND

- Forests in the northwest are overgrown with small trees and brush, posing a risk for severe wildfires.
- An automated brush clearing vehicle could provide a way to safely and efficiently reduce the fuel load in forests and around homes



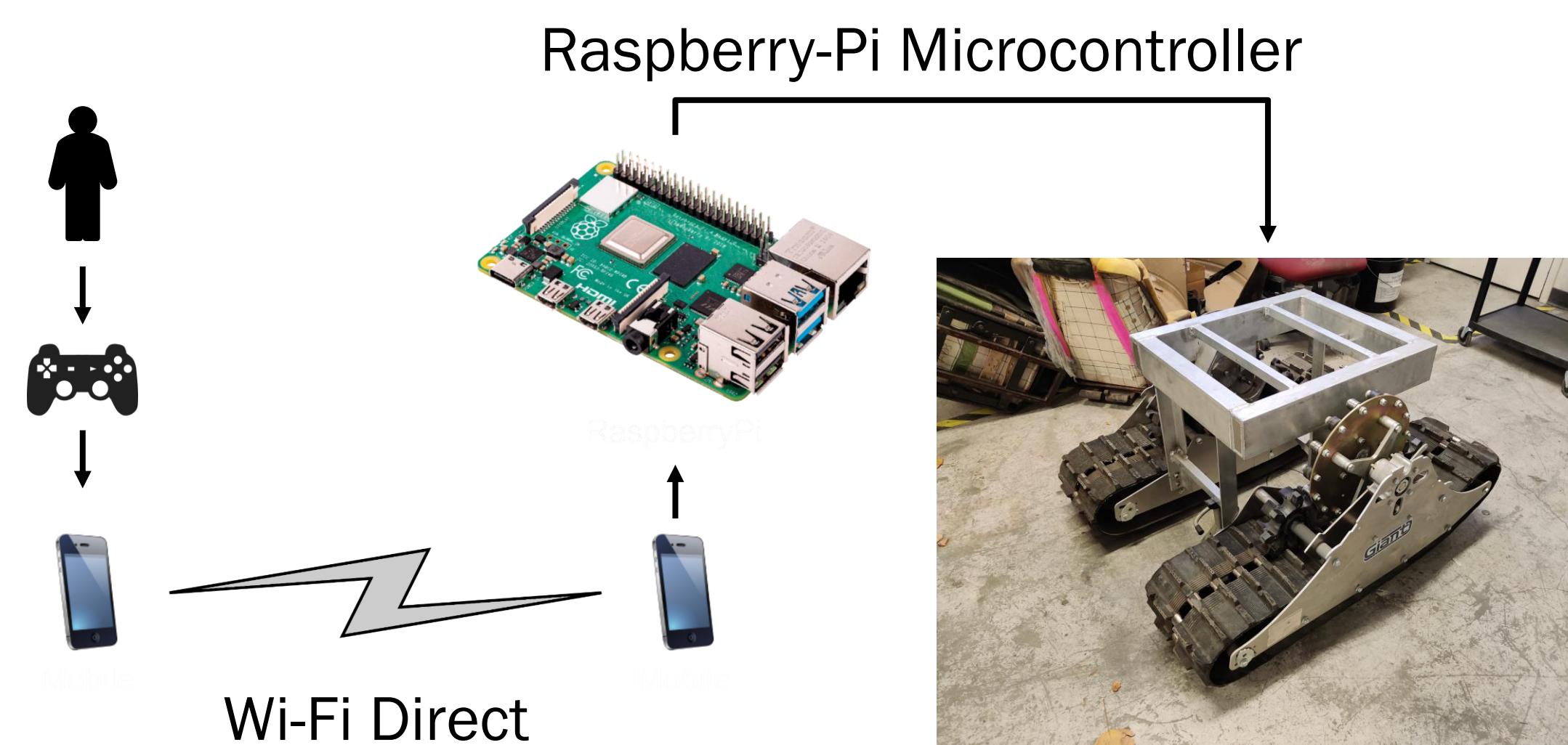
This machine was provided as a starting point.

KEY REQUIREMENTS

- Vehicle should fit in bed of pickup truck (5x8 feet)
- Operate as remote-controlled vehicle up to 60 feet
- Prioritize safety using E-stop buttons and automatic shutoffs based on tilt and acceleration

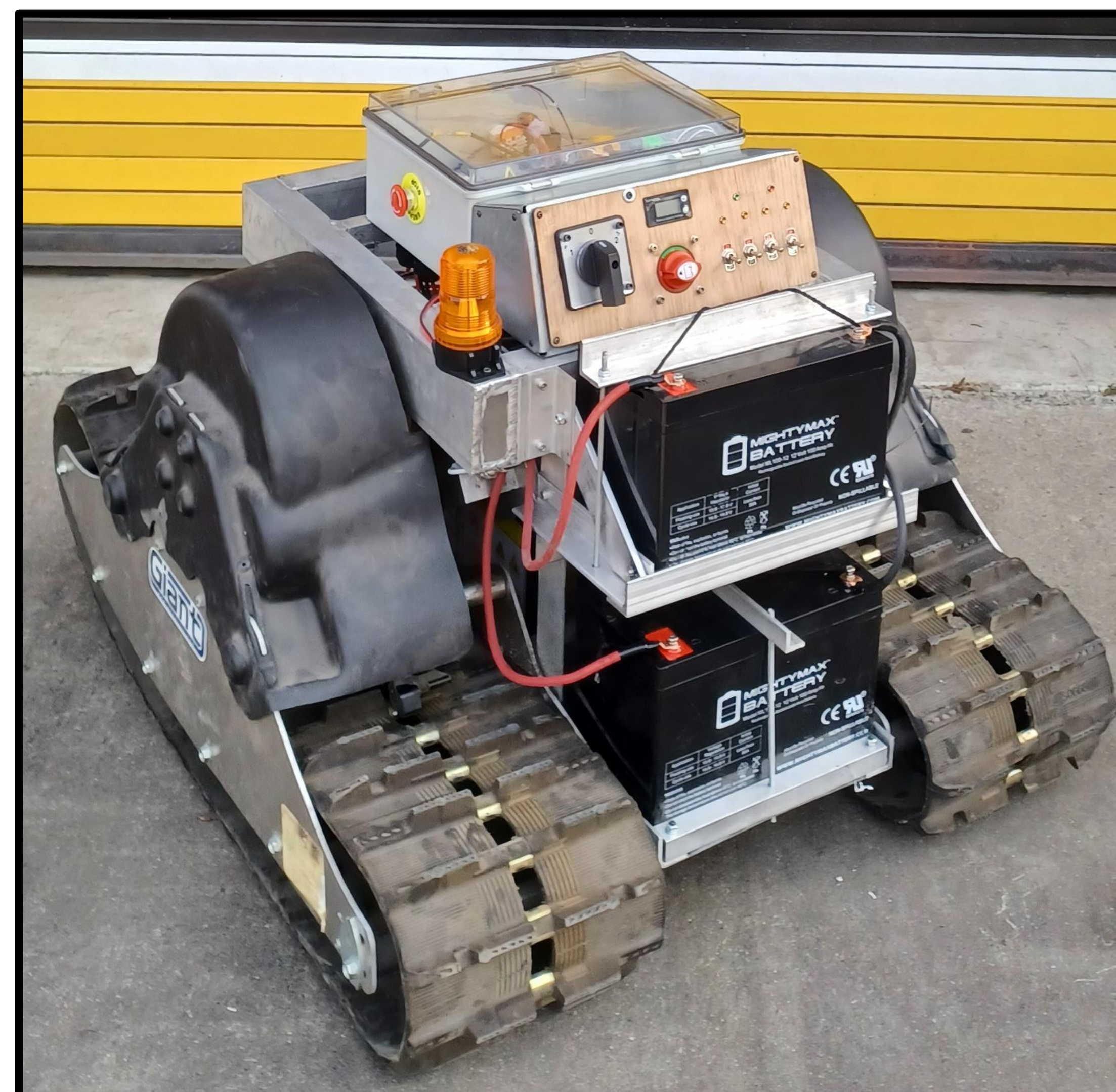
CONCEPT DEVELOPMENT

- Modify frame to support batteries and electronics
- Use tractor style 3-point hitch system to attach to brush hogs, mowers, or other tools.
- Use Wi-Fi Direct to communicate with vehicle

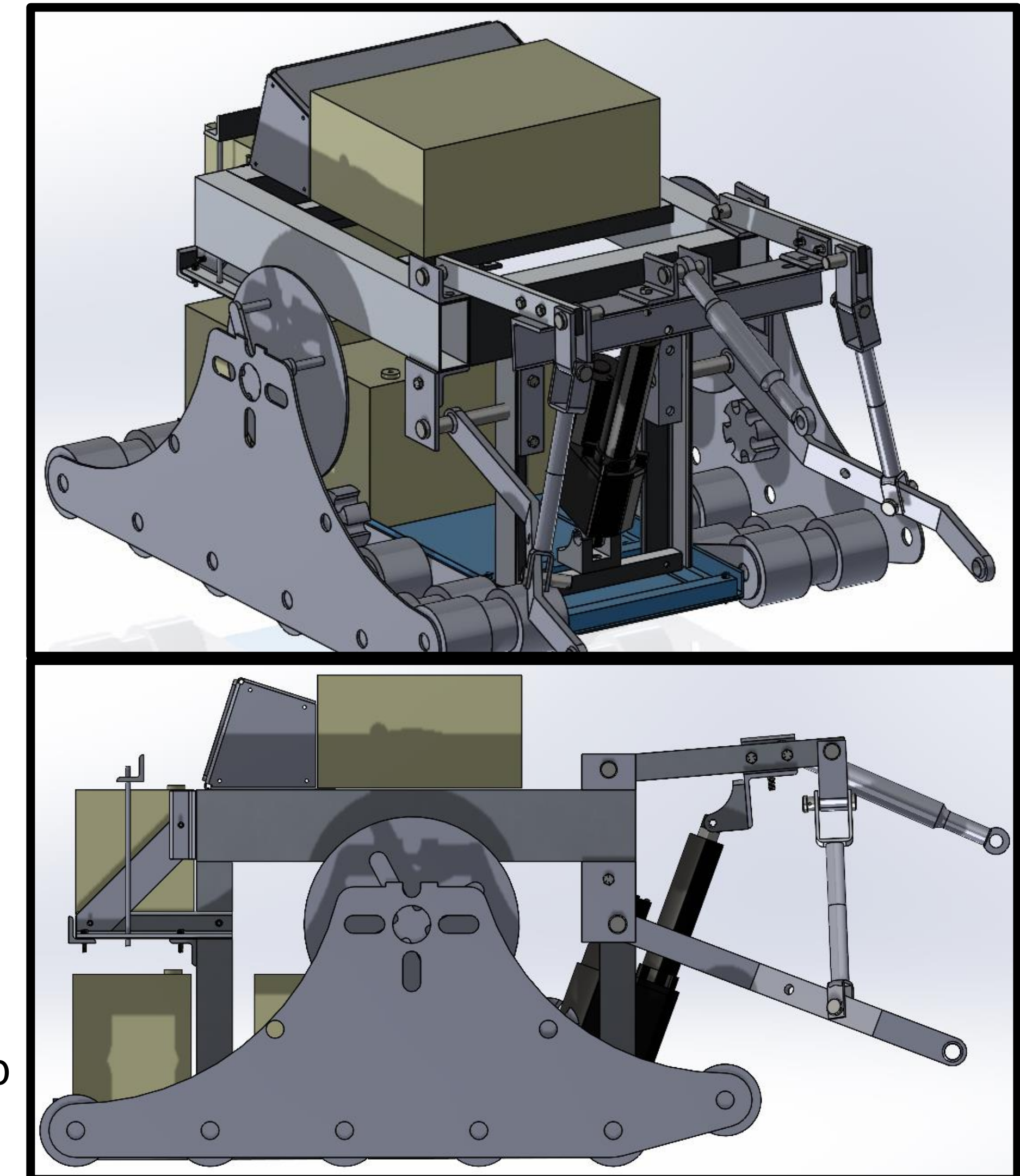


Basic Communication Network for control

FINAL DESIGN FEATURES



- CAD design for the vehicle with the 3-point hitch design shown
- Blue skidplate assembly was built as a way to mount batteries and other parts.
- Batteries on one end help counterbalance the weight of a cutting tool on the other end.
- Electronics mounted on top for ease of access.



RECOMMENDATIONS

- Determine how to power a 3-point implement
- Build the 3-point hitch
- Develop towards an automated system
- Test performance characteristics
- Internal Combustion Power for longer operation time

ACKNOWLEDGEMENTS

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- Tim Tilton
- Dr. Eric Wolbrecht
- UI College of Engineering
- UI Mechanical Engineering Department
- UI Chemical Engineering Department

- 3 Non-spillable lead acid batteries, 100 Ah at 12 V
- Emergency stop buttons on each side
- Electronics mounted in accessible location on top
- Cameras to send video to remote operator
- Automatic shutoff if controller loses connection, vehicle tips, or maximum speed is exceeded