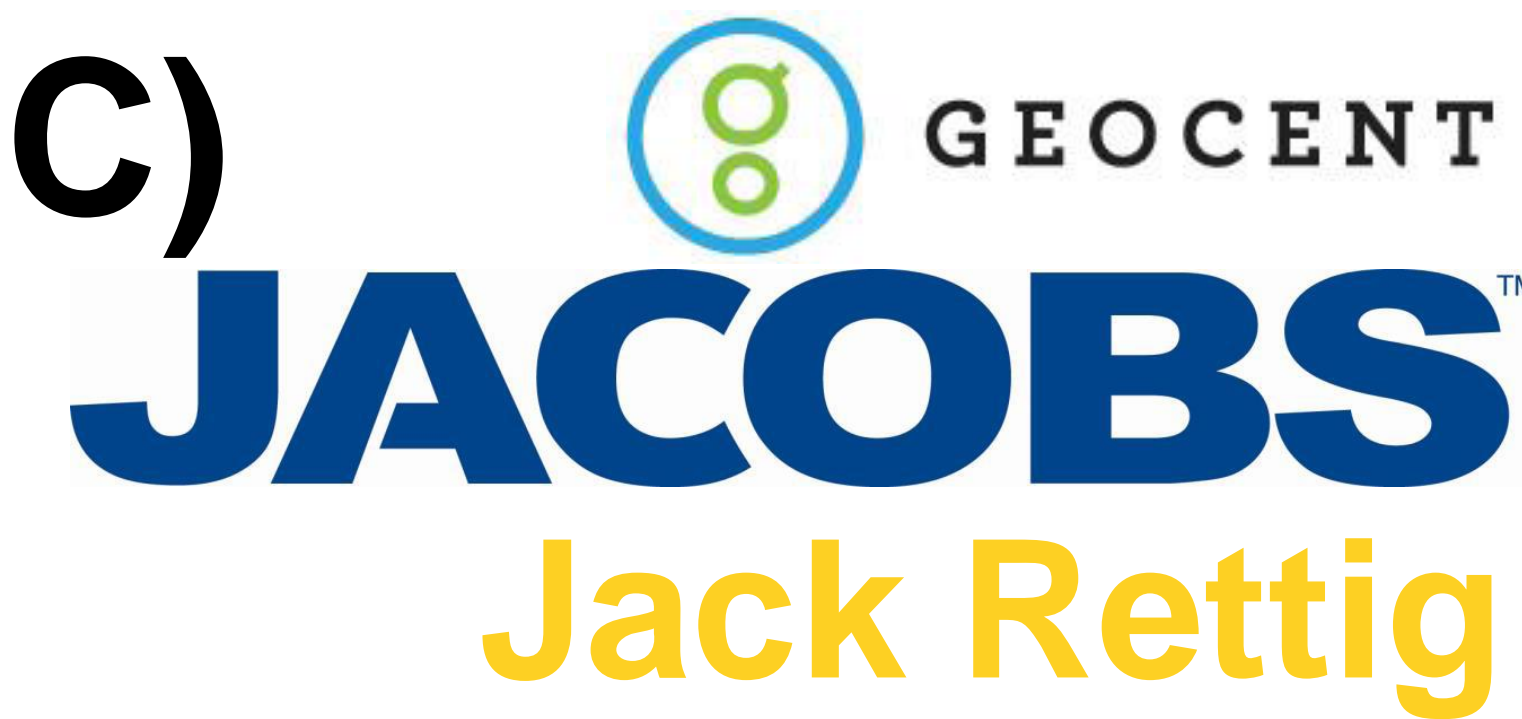


ME, ECE, BE Capstone Design Programs

Team #15: NASA Human Exploration Rover Challenge (NHERC)

Derek Duplessis (ME), Robert Fink (ME), Wes LeBlanc (ME), Andrew Perkins (ME), Chandler Scheuermann (ME)



Background

2015 Serves as Louisiana State University's debut in the NASA Human Exploration Rover Challenge, a premier educational outreach competition that focuses on student built "rovers" which are designed to traverse a 3/4 mile obstacle course in the fastest time possible.

Project Constraints

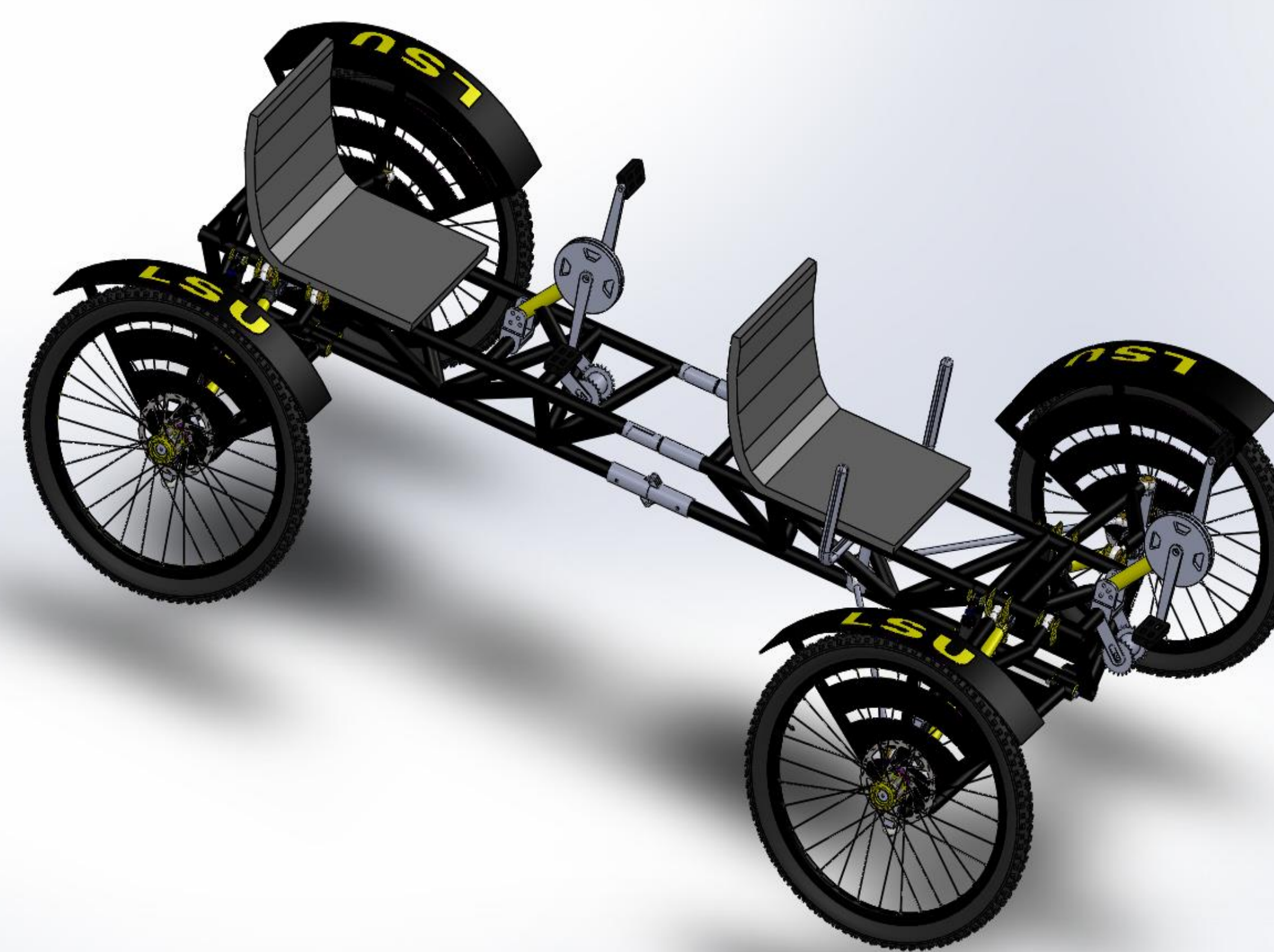
- Maintain 15" ground clearance
- Maximum turning radius of 15'
- Collapsible frame to fit within a 5 Ft.^3 storage container
- Defeat Auburn University in competition performance
- Showcase Jacobs and Geocent support role at NASA's Michoud Assembly Facility



Engineering Specifications

Assembled Dimensions	87.5" Length 56" Width
Center of Gravity	35" from front of rover
Weight	152 lbs
Top Speed	15 mph
Ground Clearance	15"
Turning Radius	12'
Spring Constant	300 lb/in
Damping Constant	20-80 lb-s/in (Adjustable)
Castor Angle	0 to 10 degrees
Camber Angle	0 to -10 degrees

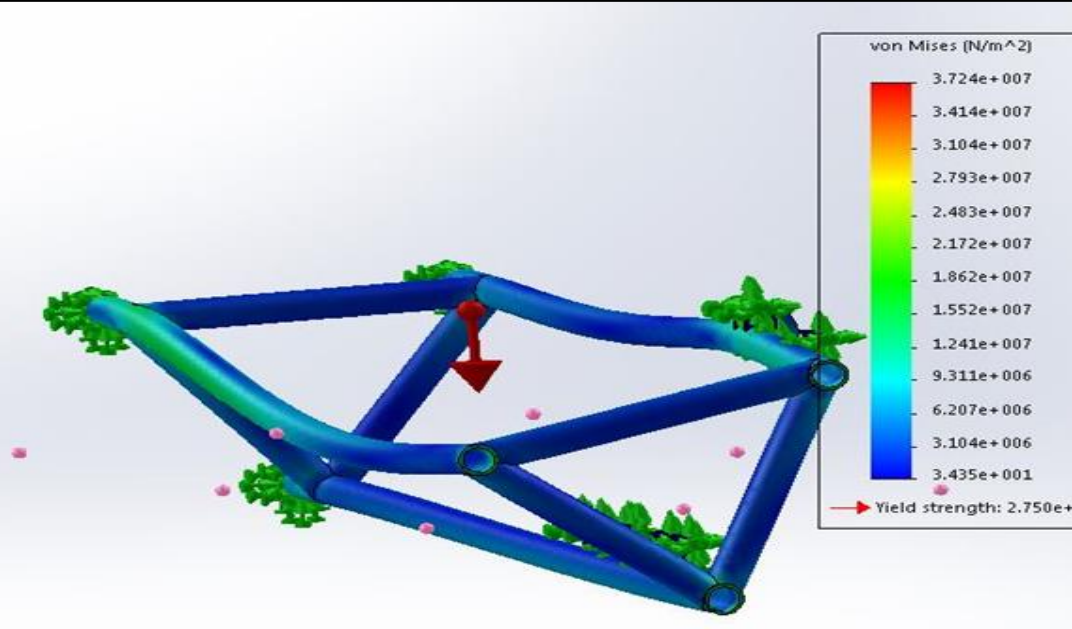
Prototype



**Dynamic Capabilities:**

- Independent short-long arm suspension capable of traversing any combination of high and low frequency impacts in four wheel drive operation
- Dual Truativ HammerSchmidt AM Cranksets permit drivers to supply independent power efforts
- Reinforced truss frame supports combined driver weight of 350 lbs.

**FEA:** Capable of supporting 500 lbs load with a factor of safety of 2.5



Testing Results

3/4 Mile Speed	4:50
Stopping Distance	10.7 Feet
Top Speed	12.1 mph

Budget Evaluation



2015 Competition Performance

Assembly Time: 1:08
Run #1 – 6:06
Run #2 – 6:21
Fastest Aggregate Time – 7:44
Collegiate Ranking: 6 <sup>th</sup> /45 Teams
Honors: Rookies of The Year



Primary Sponsors: Jack Rettig, Jacobs, Geocent



Adviser: Dr. Wanjun Wang