BAJA SAE® RENEGADE

BAJA SAE CALIFORNIA

UCI ANTEATER RACING

Instagram // anteaterracing

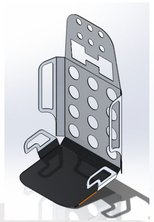
Facebook // uciracing

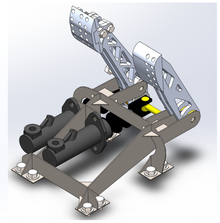
UCI Samueli School of Engineering

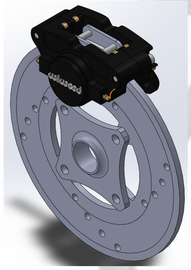
University of California, Irvine

BRAKES AND ERGONOMICS

- Weight reduction of 5.14 lbs in subsystem
  - Single 2.48 lb inboard rear brake
  - Pedal Box at 5.20 lbs
- Driver layback at 15 degrees

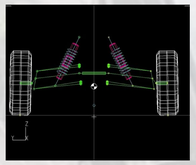






FRONT SUSPENSION AND STEERING

- Maintain subsystem weight while switching to coil over shocks (69.72 lbs)
  - Allows for independent adjustment of ride height, spring rate, and compression/ rebound dampening
- Changed Compression to Droop Ratio from 8:4 to 5:7
- Decreased turning radius from 9 ft to 7.5 ft



ORGANIZATION

Advisors:
Prof. McCarthy, Robert "Smitty" Smith, Phil Chipman, Ron Kessler

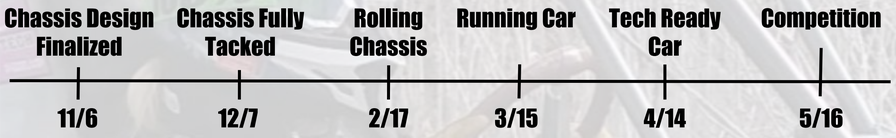
GOAL - REFINEMENT

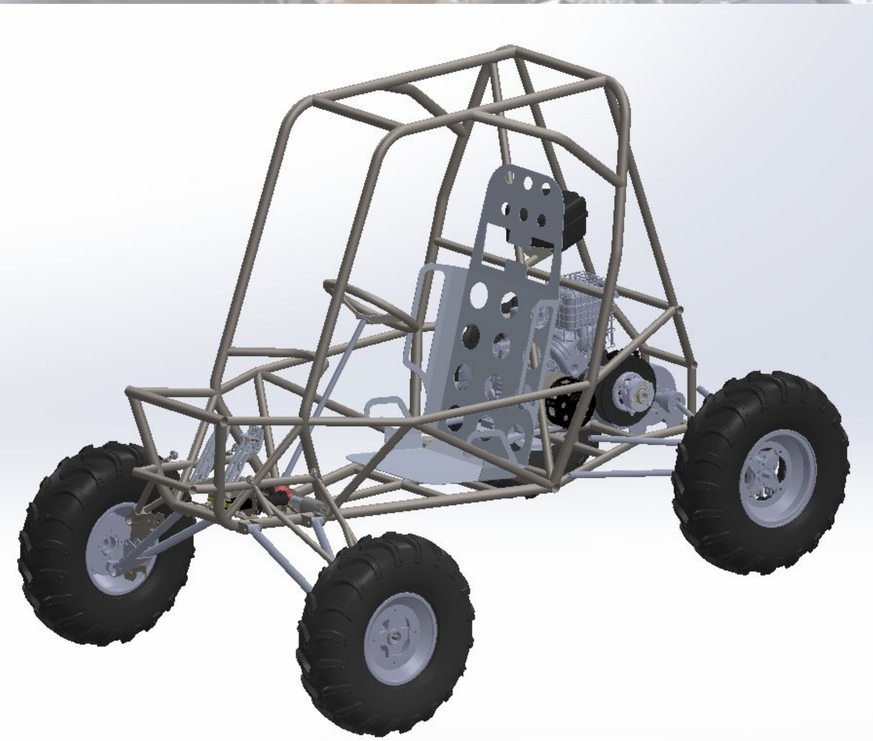
The 2017- 2018 vehicle was evaluated based on its placing at competition events and data collected during testing. The key characteristics necessary to place among the top 10 teams were identified and resulted in the following design criteria for RENEGADE for 2018- 2019.

Requirements:

- Reduce weight - Target: 415 lbs → 380 lbs
- Reduce Vertical COG - Target: 26 in → 18 in
- Validate all designs using real world analysis

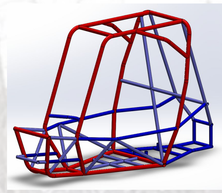
TIMELINE





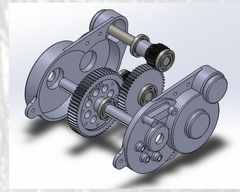
CHASSIS

- Weight reduction of 15 lbs from Solidworks weldment model of chassis
  - Saved 18 ft of tubing overall
  - Projected chassis weight: 70 lbs
- Simulated torsional rigidity: 1000 ft-lbs/deg
  - Actual Goal: 850 ft-lbs/deg



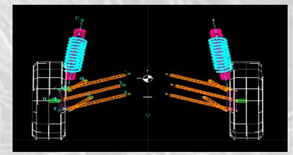
POWERTRAIN

- Weight reduction of 10 lbs in Gearbox
- Gearbox shortened from 7 to 6.5 inches center-to-center to decrease wheelbase
- Gear ratio increased from 6:1 to 7:1
  - Projected top speed: 40 mph

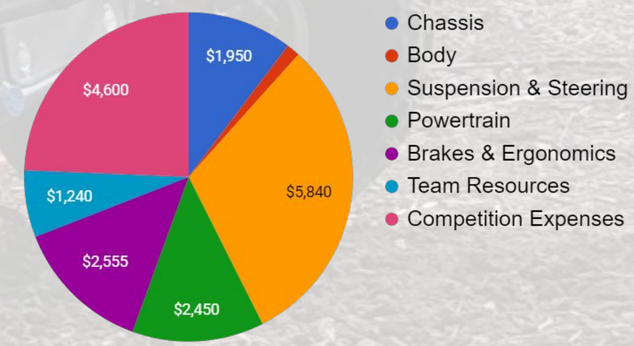


REAR SUSPENSION

- 5 link suspension geometry setup
  - Shocks now mounted at uprights not on trailing arm
- Reduction in weight by 20% from 32.6 lbs to 26.4 lbs
- Decreased toe change over travel by over 2 deg as well as camber change over travel by 1.5 deg



BUDGET



2018-19 Vehicle Budget = $14,285
Est. Competition Costs = $4,600
Total = $18,885