

Team #18: Aerial Drone – The Flyin’ Hawaiian

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Objective Statement

Design and additively manufacture a drone capable of real-time identification and geolocation of objects. It must sustain controlled flight for 20 minutes from 2.41 kilometers away.

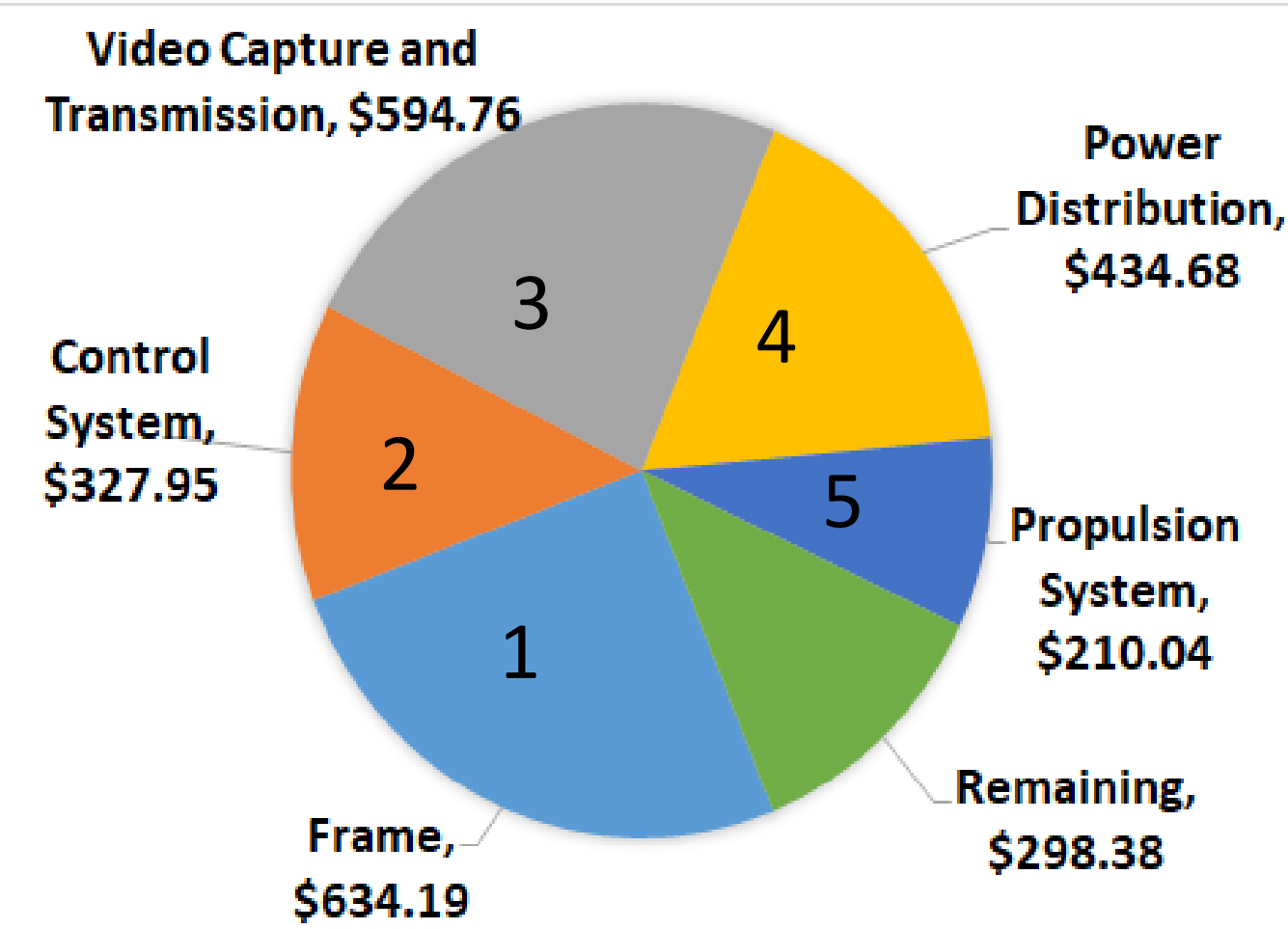
Competition Background

Location: LSU Fire and Emergency Training Institute
Date: April 5th, 2019 (LSU's first ever!)
Guidelines: 15 minutes to survey three objects, transmit video imagery, and autonomously identify as many features as possible. Winner determined by points from the system accuracy, the utilization of 3D printing, and results presentation of materials testing.

Engineering Specifications

Specification	Values
Total weight	≤ 1.8 (kg)
Diagonal span of motor centers	625.87 (mm)
Thrust	≥ 17.5 (N)
Flexural Strength	30.6 (MPa)
Flight Range	2.41 (km)
Flight Time	20 (min)
Battery Capacity	11000 (mAh)
Budget	2500 (\$)
GPS Accuracy	+/- 5 (m)
Camera Video Quality	1200 TVL (1080p)

Budget Breakdown



Final Assembly

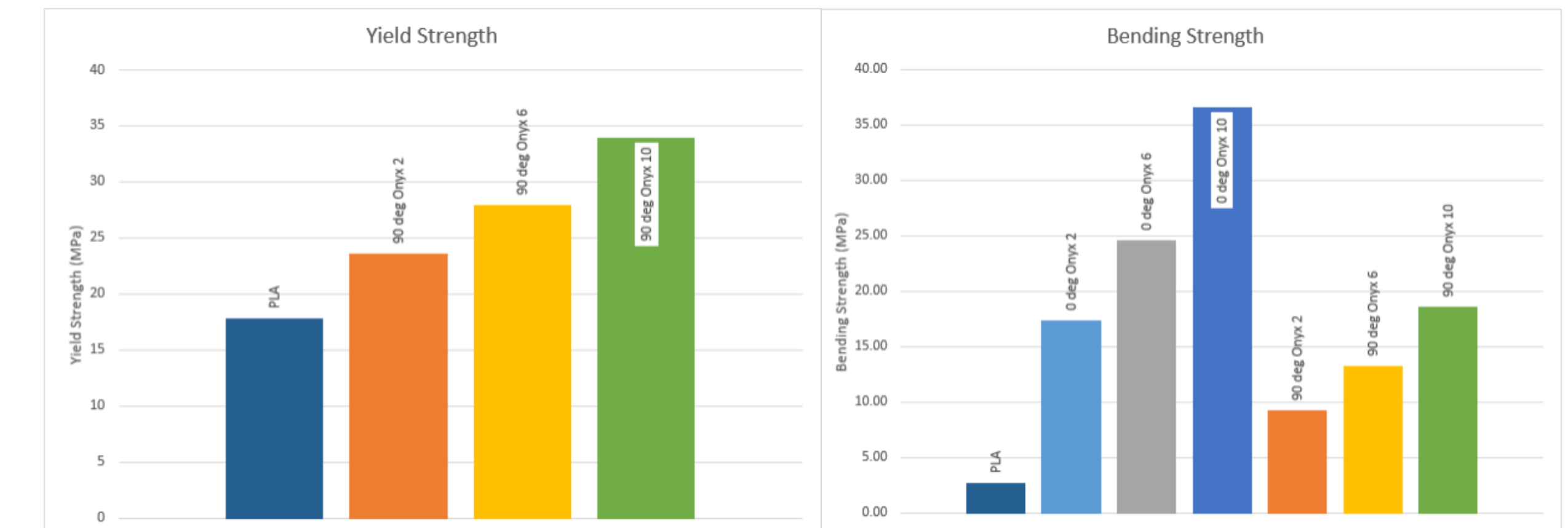


Safety Considerations

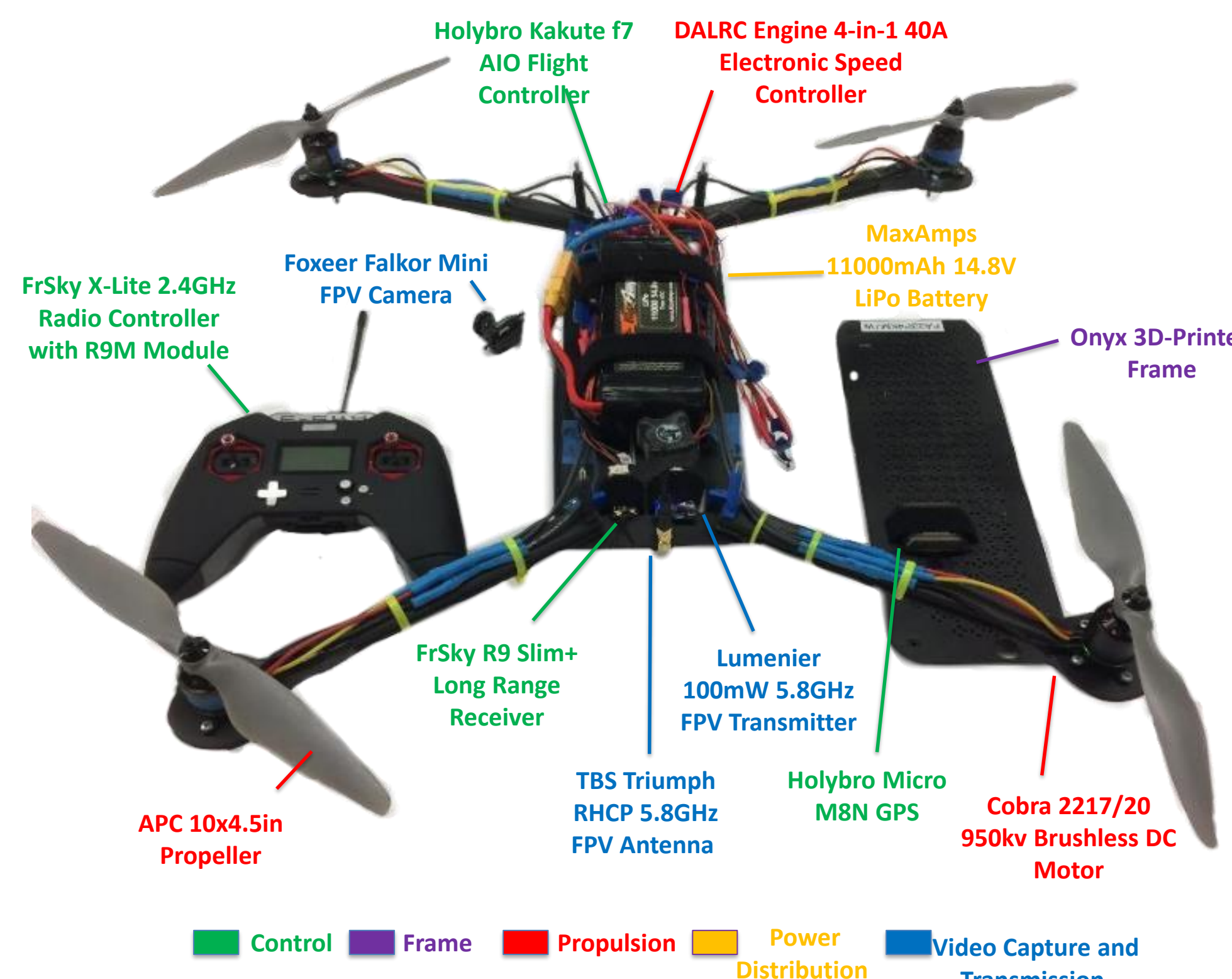
- Enable return-to-home feature
 - Lost control signal
 - Low battery power detection
- Fly within line-of-sight
- Do not fly above bystanders

Test Results

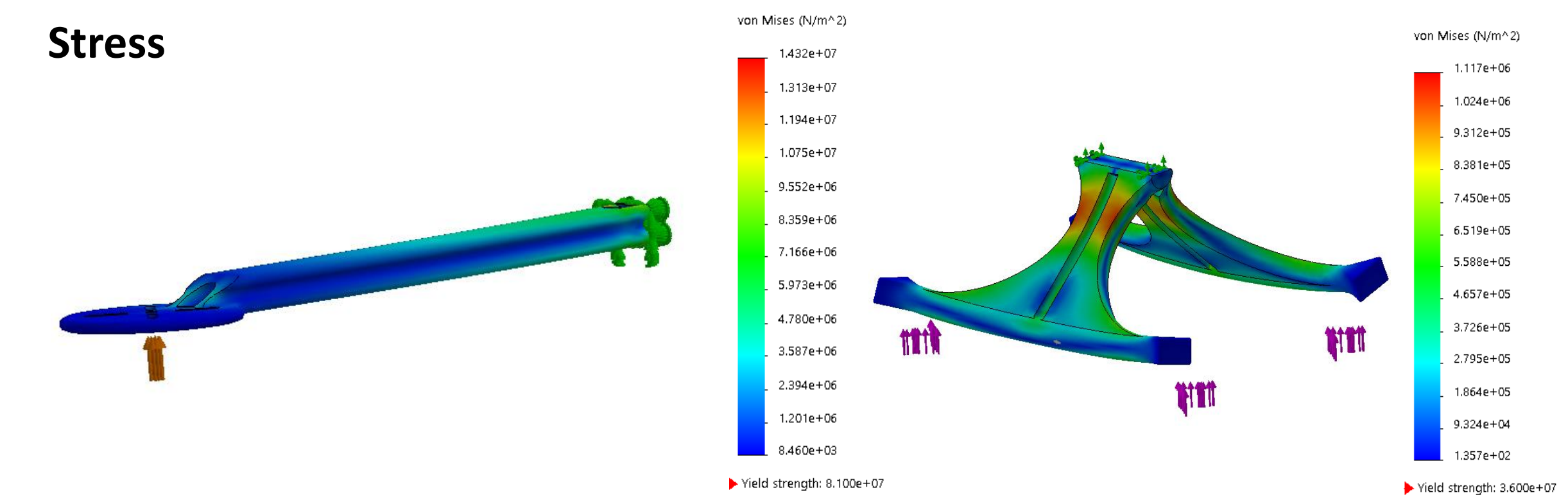
Material Testing



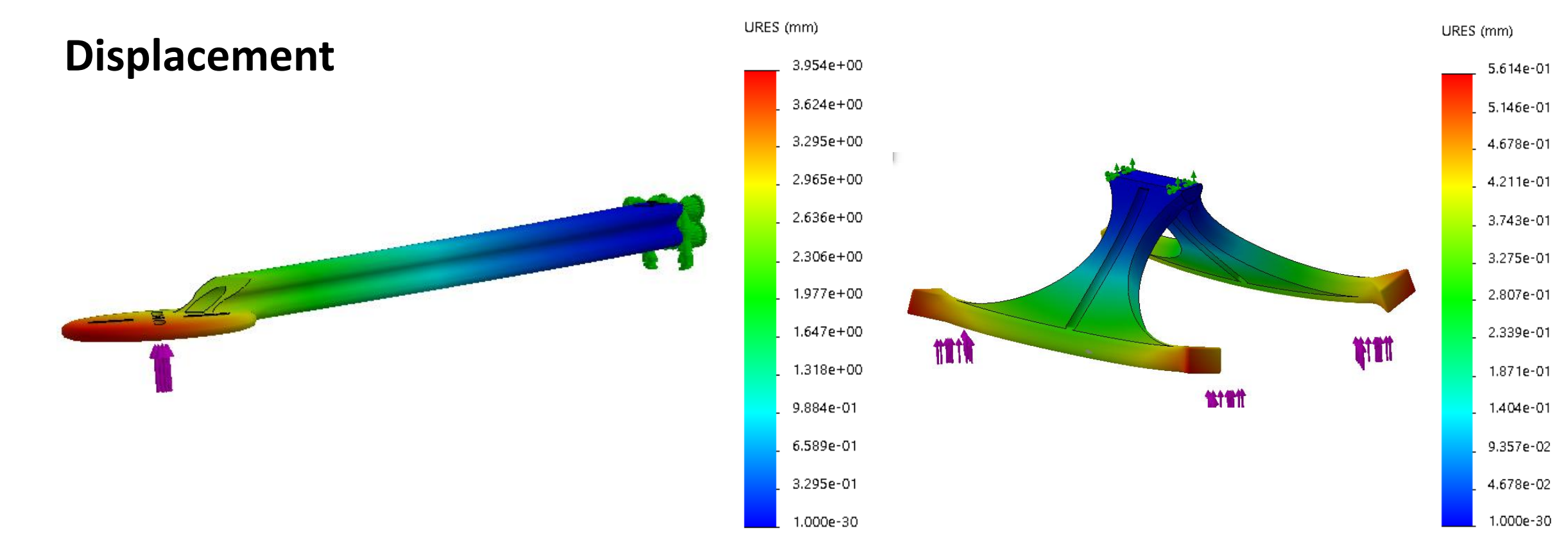
Subassemblies



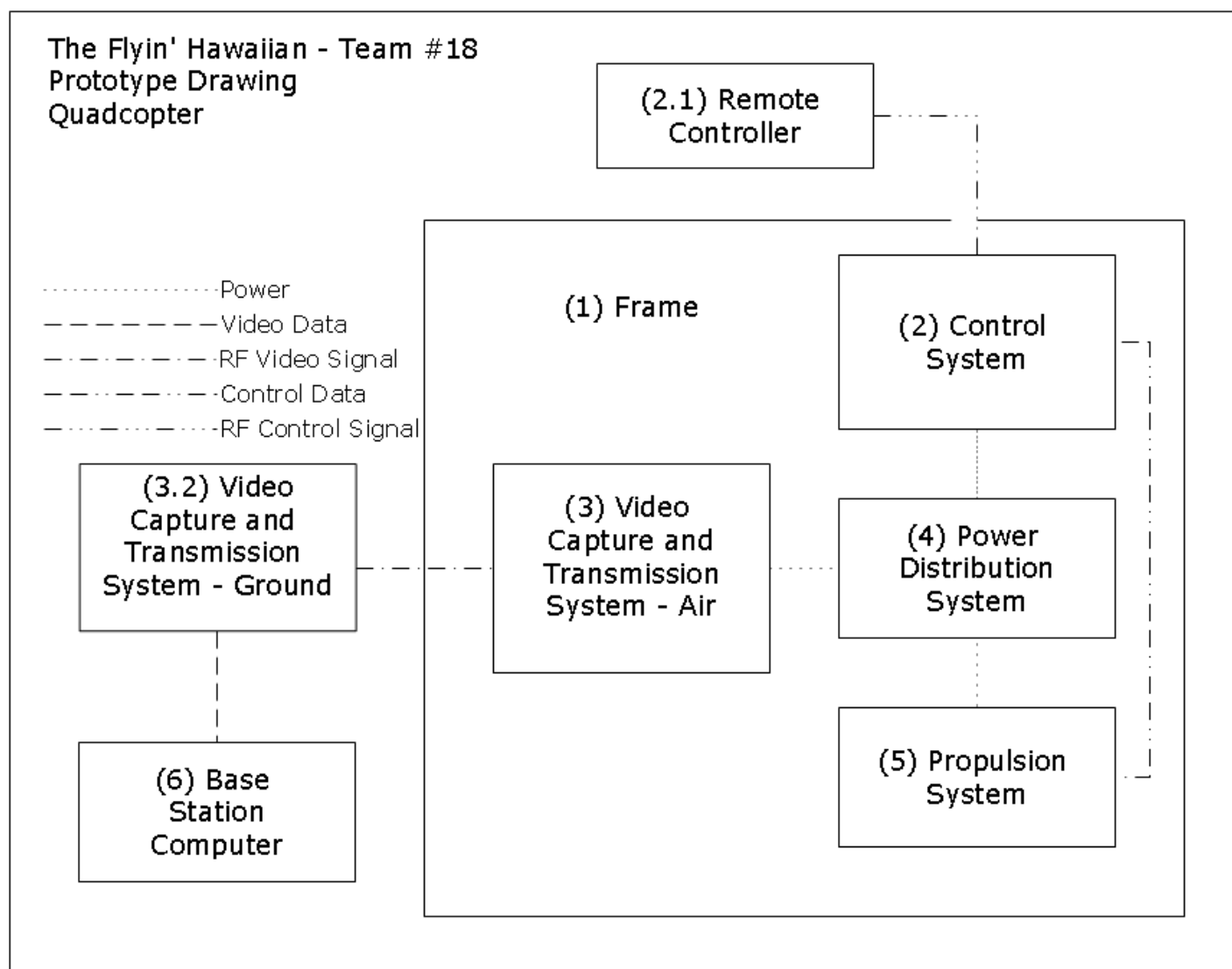
Stress



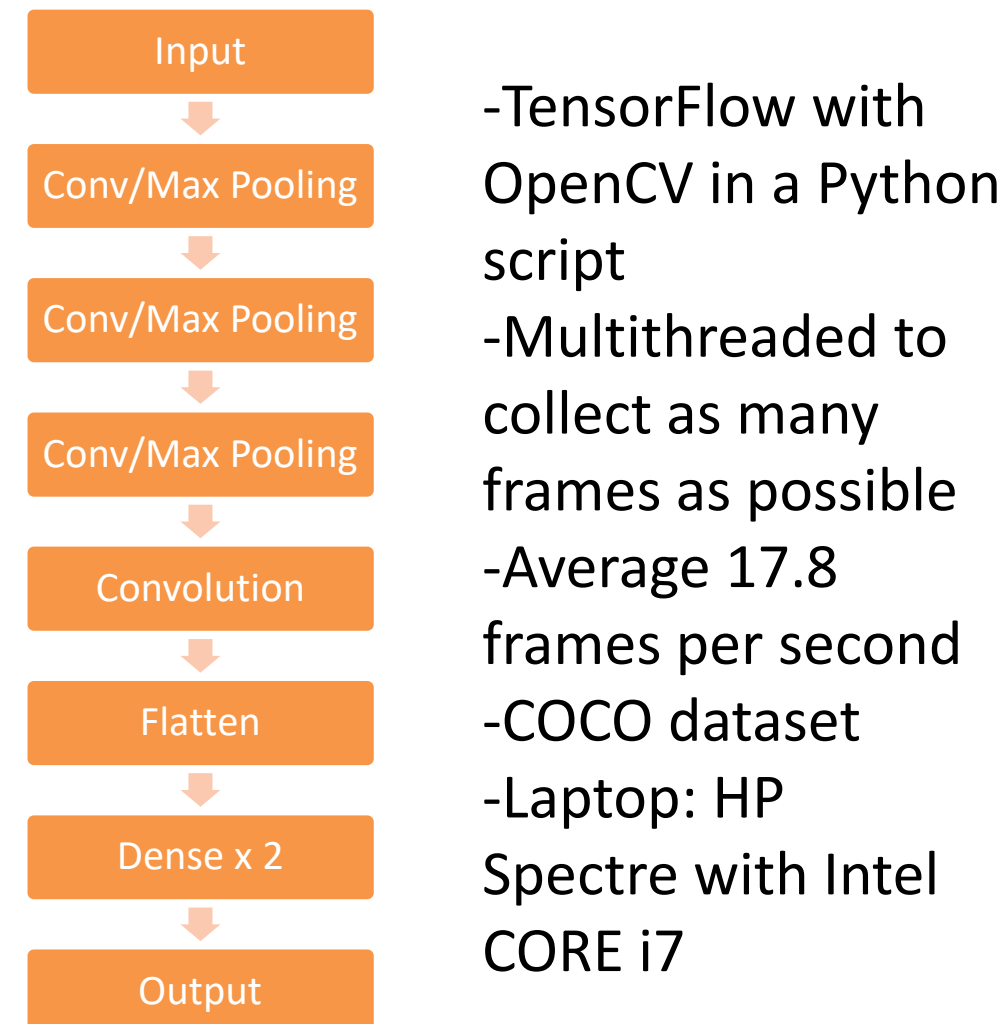
Displacement



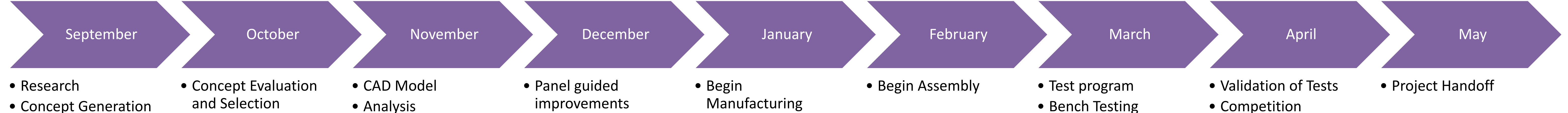
Electrical Systems Overview



Object Detection



Project Timeline



Sponsors: Jack Rettig

Advisor: Marcio de Queiroz