

Band-Beesten

The Journey Continues



First Year

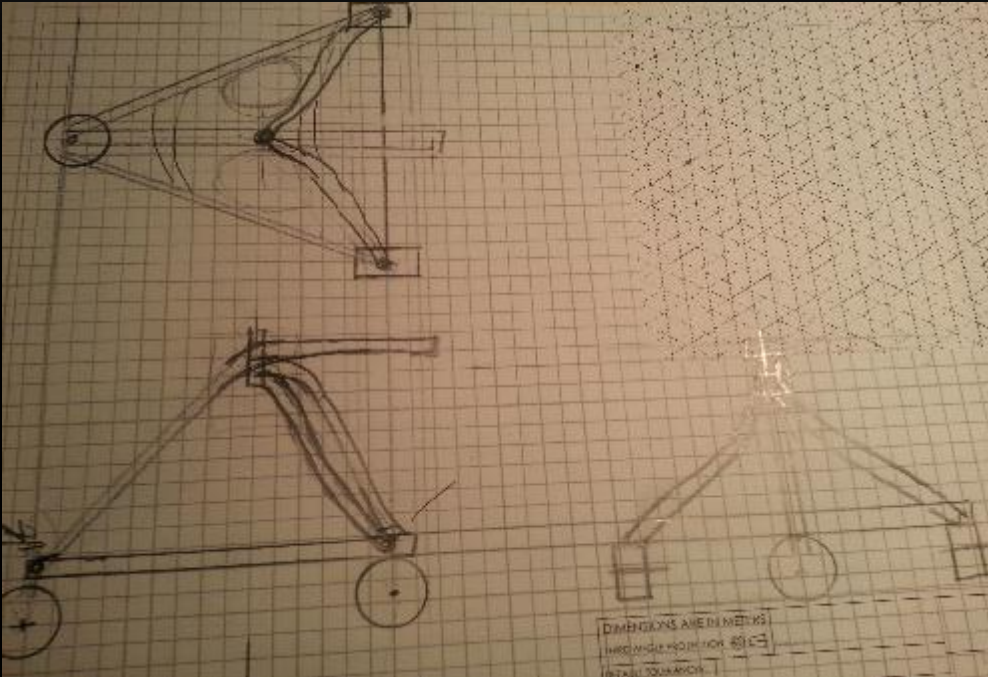


Last Year



This Year

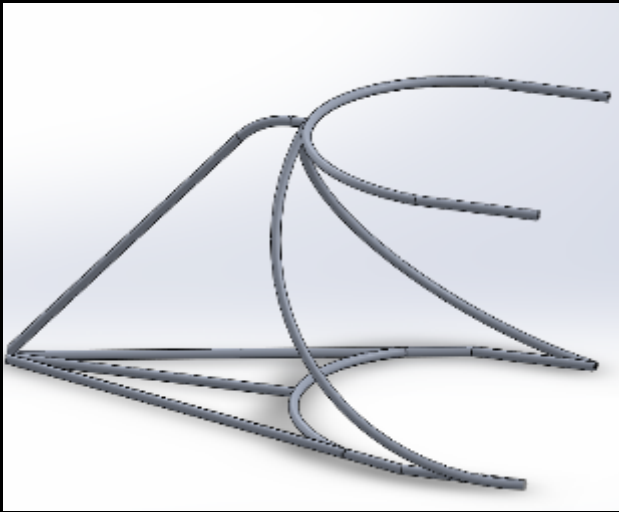
CLIENT NEEDS



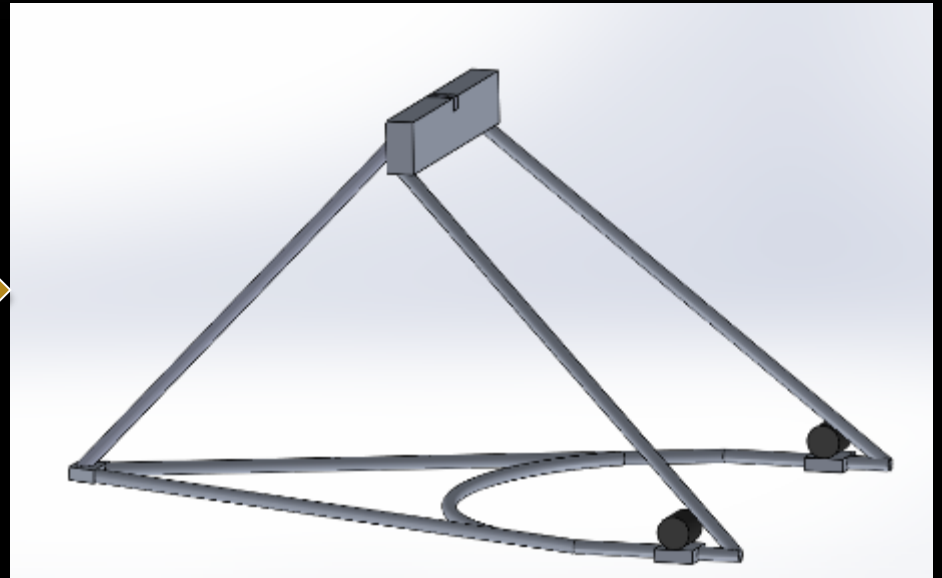
- Tetrahedral Design
- Collapsible/Folding
- Lightweight Frame
- Powered Casters
- Capable of 2% Grade
- Human Interface

Initial Sketch Provided by Dr. Odom

Frame Concept



First "Fantasy Frame"



Revised "Logical Frame"

System Architecture

Front View



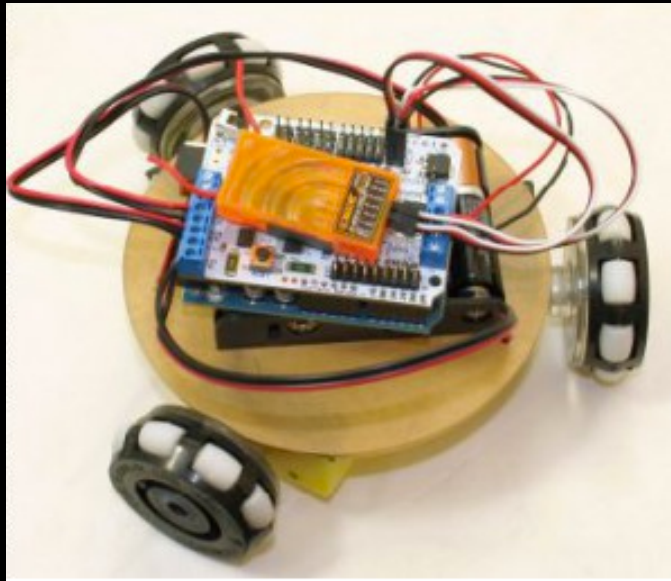
Right Side View



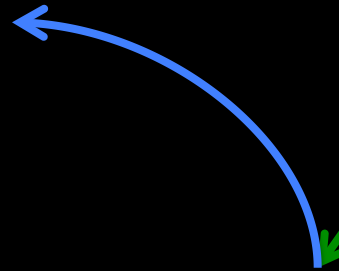
Prototype Frame



Prototype Propulsion System



Omni-Directional Robot

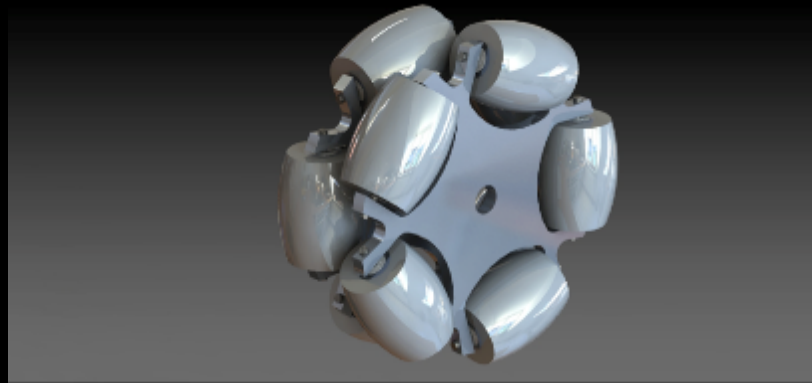


Radio Controller



Arduino Uno Board

Omni-Wheels

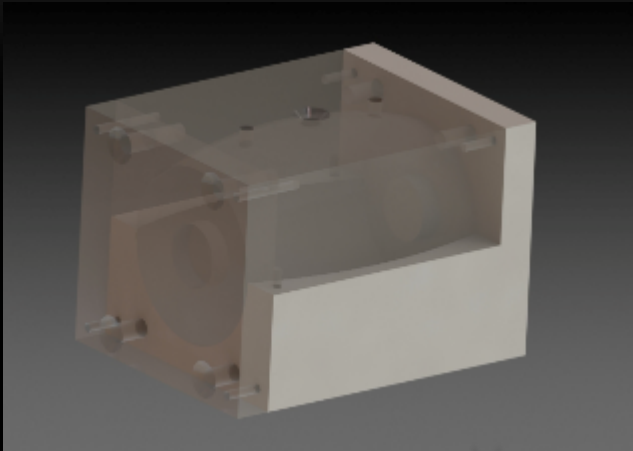


Render of Designed Omni-Wheel

Actual Omni-Wheel



Wheel Molding Process



Render of Designed Mold



Actual Mold in Use



Final Product

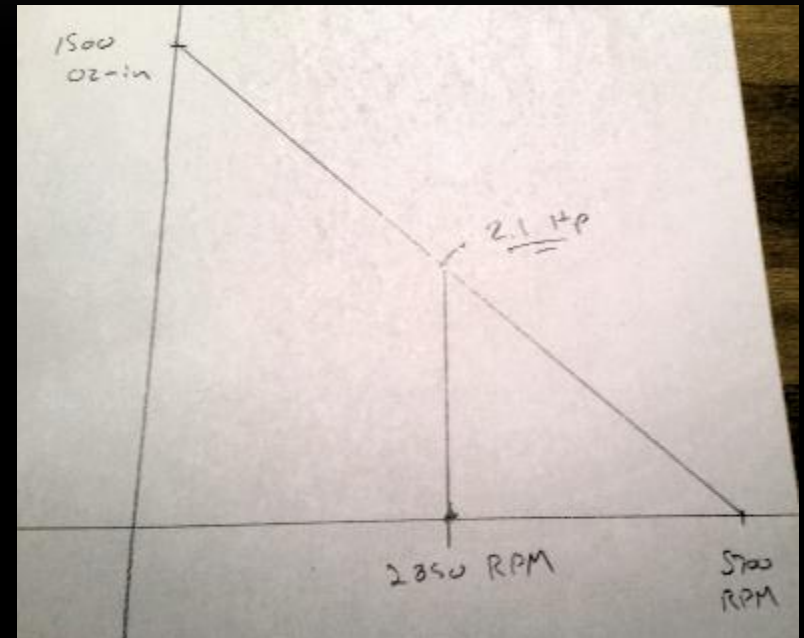
Operation Requirements

General Requirements

- Total Weight 300 lbs
- Velocity 5.8 ft/s
- Acceleration 18.25 ft/s²

Requirements for each Motor

- Max Power: 1.057 HP
- Max Current: 57 Amps
- Continuous Current 8.3 Amps



Component Selection



Specs	
Diameter	3.1 in.
Length	5.8 in.
Peak Horsepower	2.1
Peak Torque	1500 oz-in
Efficiency	79%
RPM at 24V	5700 rpm
Shaft Diameter	1/2 in.
Shaft Length	2 in.



Battery Specifications

- 24 min. Capacity
- Capable of 32 A
- 24 V Continuous
- Lightweight
- Low Cost

Overview of Electrical Systems



24 V Source
Common Ground between
three sets of batteries



On-Off Switch



Kill Switch



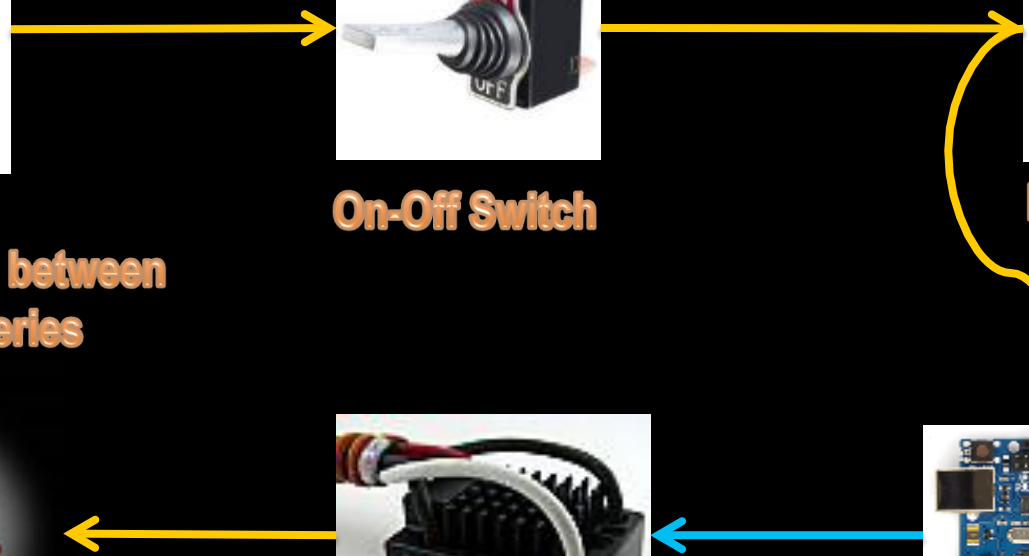
Motor



**Throttle Control Motor
Controllers**



Arduino



Overview of Control System

RC Module

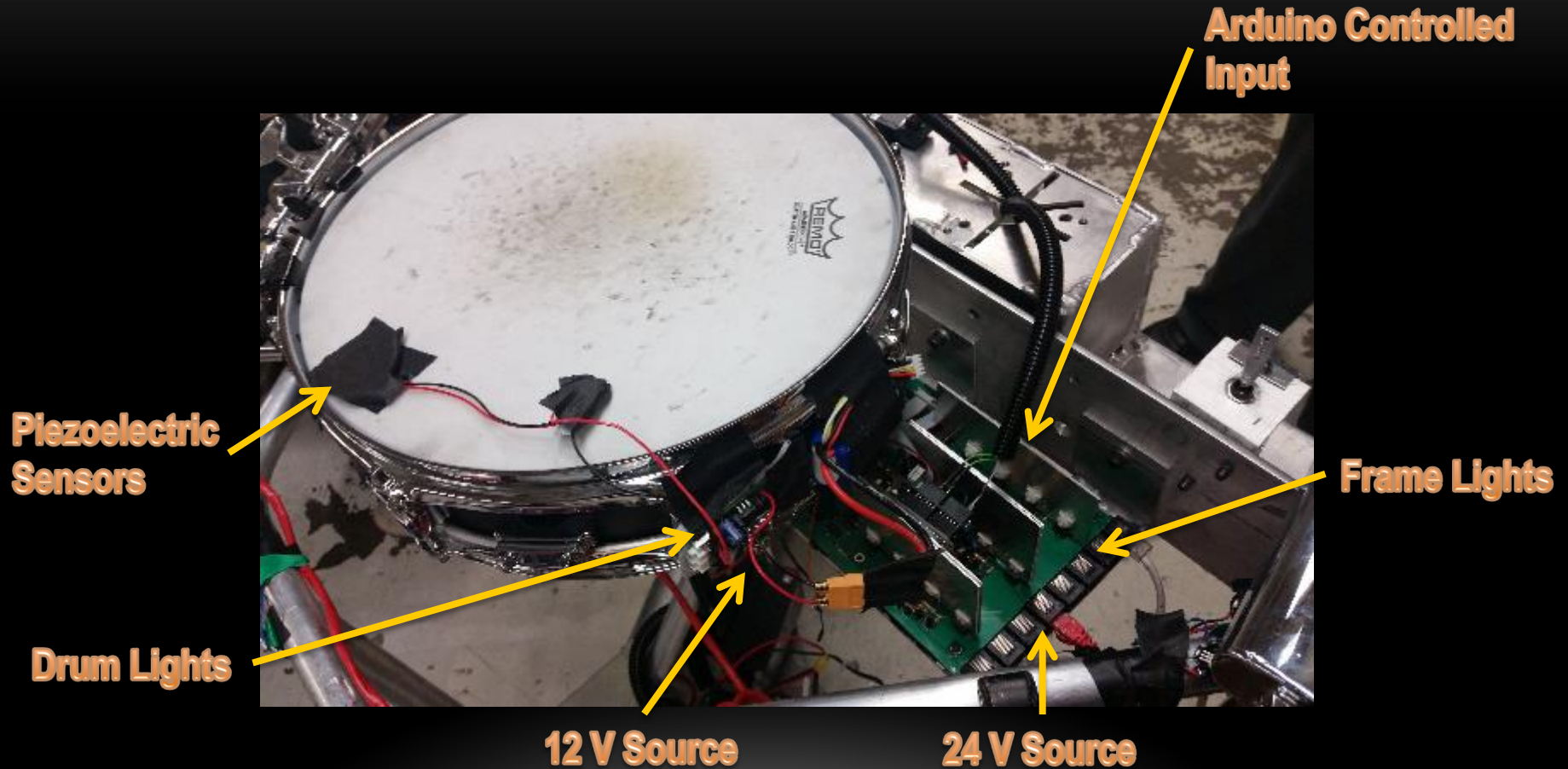
RC Controlled

Radio Controller

Arduino Uno
Microcontroller



Overview of Lighting System



Final Product 2014

Questions?

