Smart Granola Kiosk

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San Diego State University
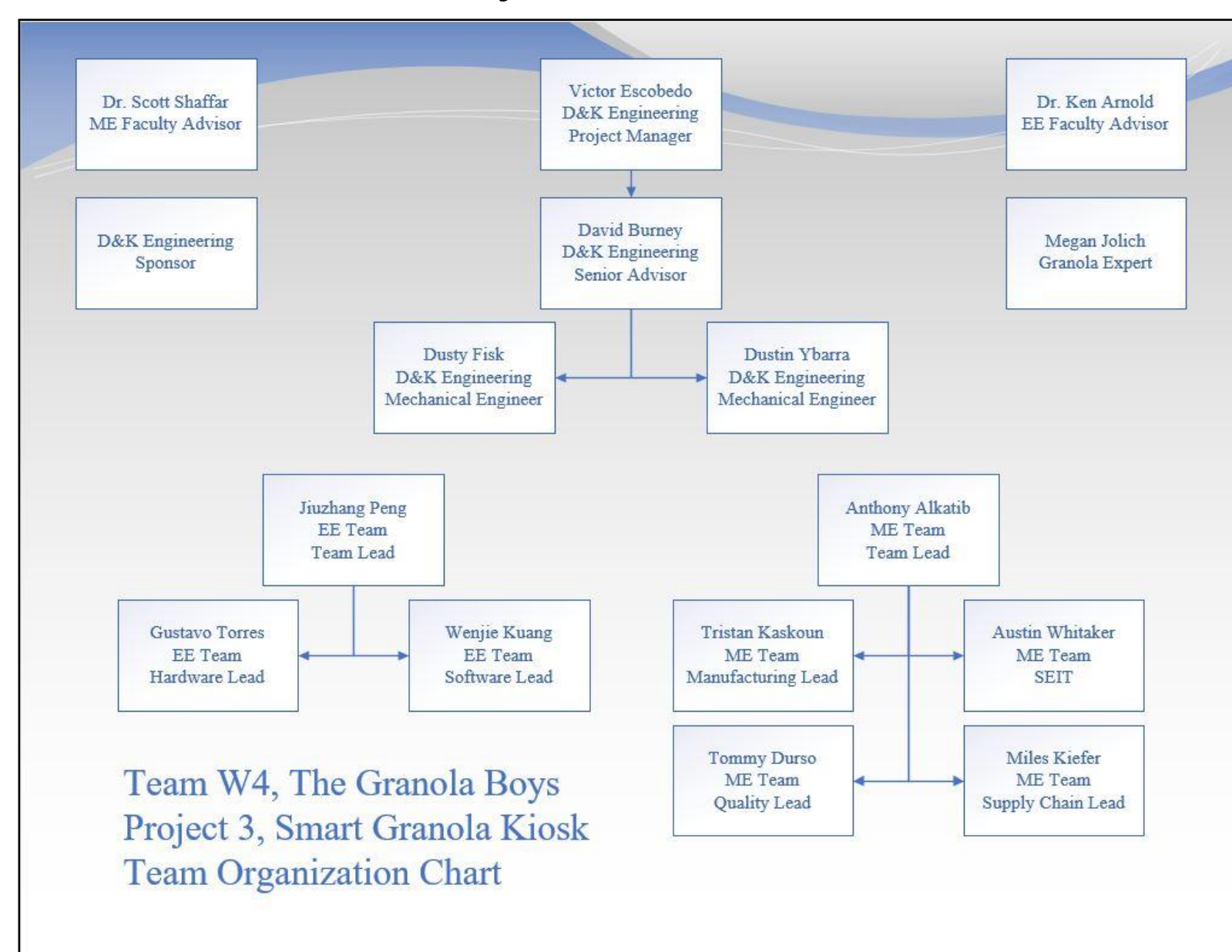
Meet the Team

Gustavo Torres
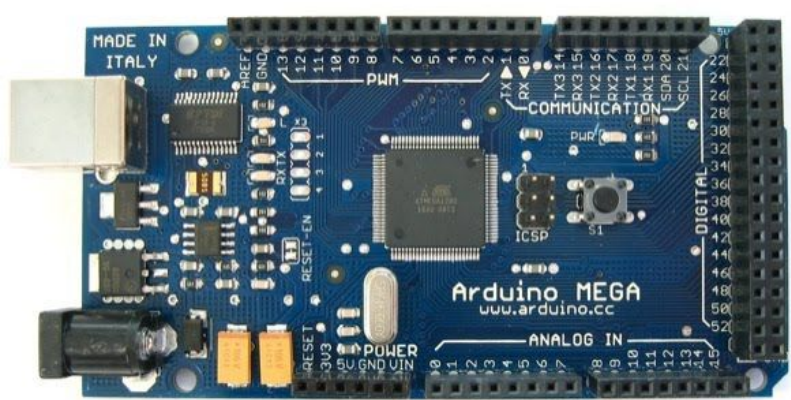Software Lead

Wenjie Kuang
Team Lead

Jiuzhang Peng
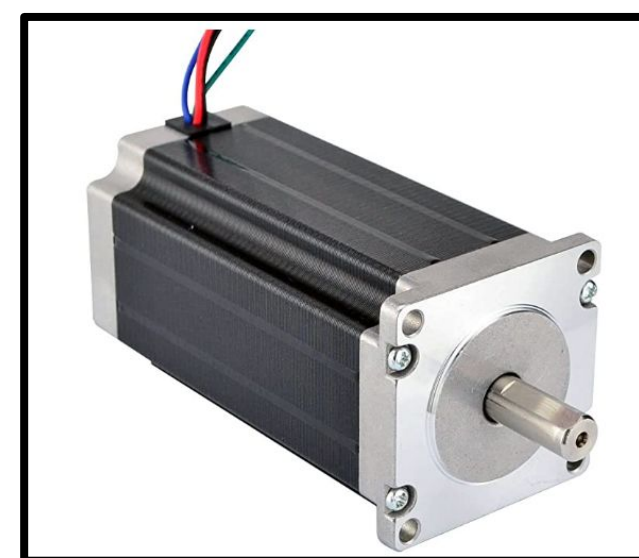System Lead

Team W4, The Granola Boys
Project 3, Smart Granola Kiosk
Team Organization Chart

Electrical Components

Arduino MEGA

Stepper Motor

Ultrasonic Sensor

Interface

Project Overview

D&K Engineering is looking to expand their product line of smart machines and kiosks with the addition of a smart granola kiosk. A granola mixing and dispensing kiosk would allow them to expand into this emerging market and keep their business thriving. This kiosk will enable a customer to create their own mixture of granola from a base granola and a selection of up to four different toppings. The goal for this kiosk is for it to ultimately be used in a grocery store much like Whole Foods.

Project Requirements

The three required subsystems which would ultimately makeup the entire kiosk were:

1. Storage Sensors Subsystem
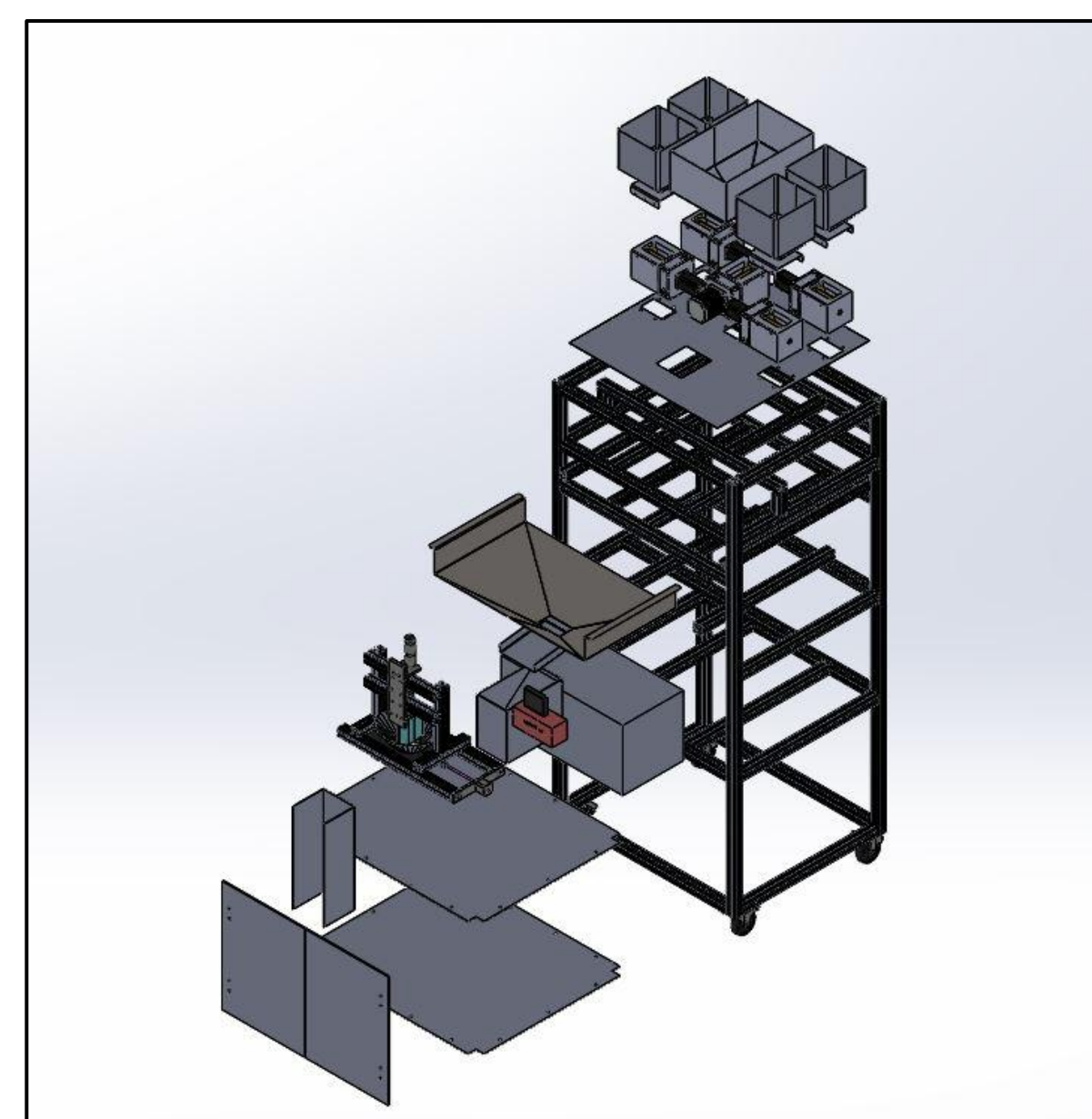2. Dispensing/Measuring Motor Subsystem
3. Mixing Motor Subsystem

These subsystems needed to meet the following requirements:

- Dispenses granola in a reasonable amount of time
- Arduino as the main microcontroller
- Storage ultrasonic sensor for volume measuments
- Interface software for interaction with customer
- Consistent motor rotation for dispensing
- Runs on a common 120V outlet
- Correct amount dispensed over a period of time
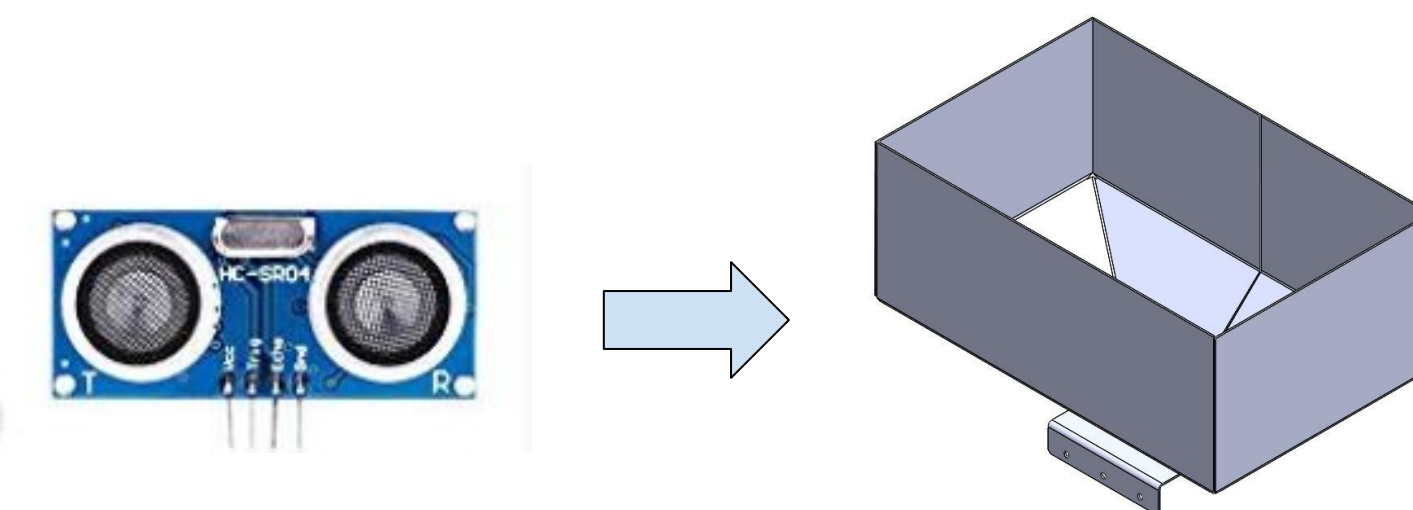
Kiosk Specifications

- Height = 79 inches on wheels
- Weight = roughly 1000 lbs.
- Max Amperage = 5A
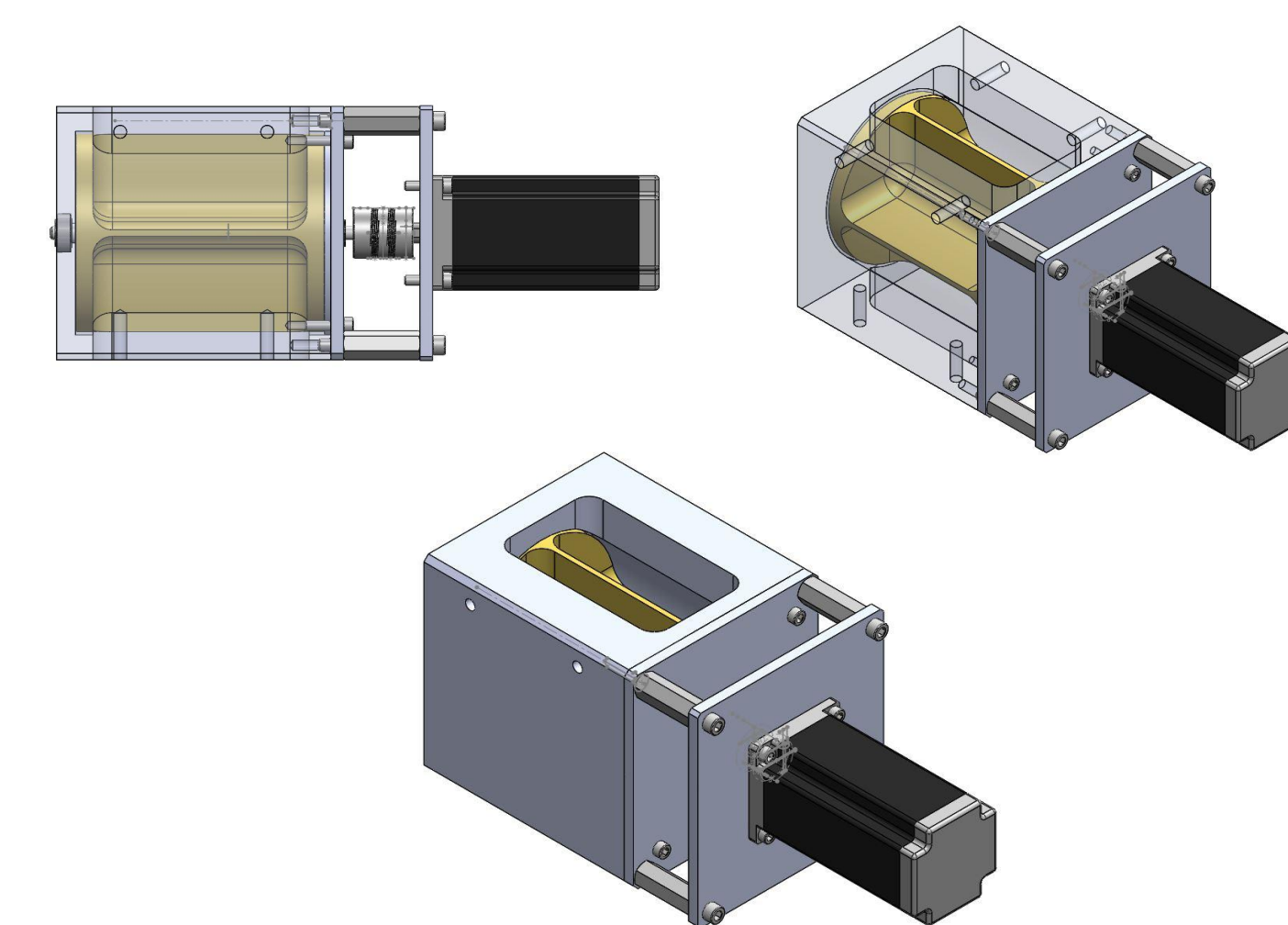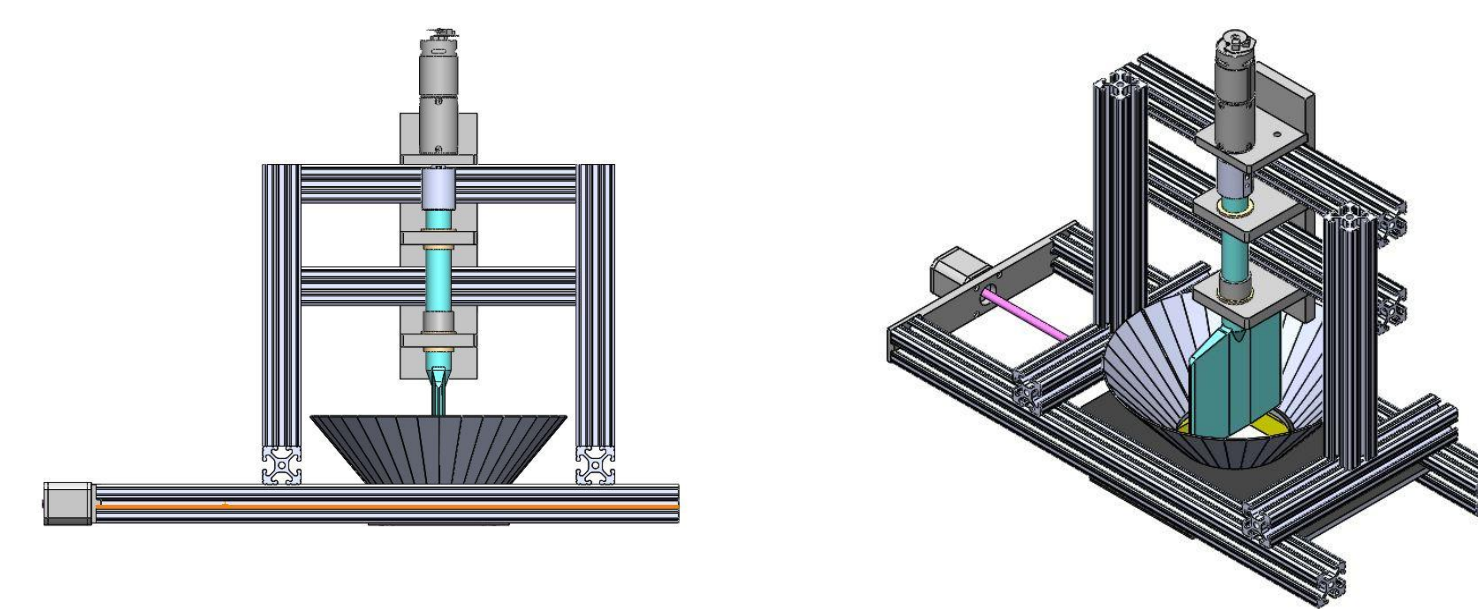- Operating Voltage = 120V

Final Design

Design Breakdown
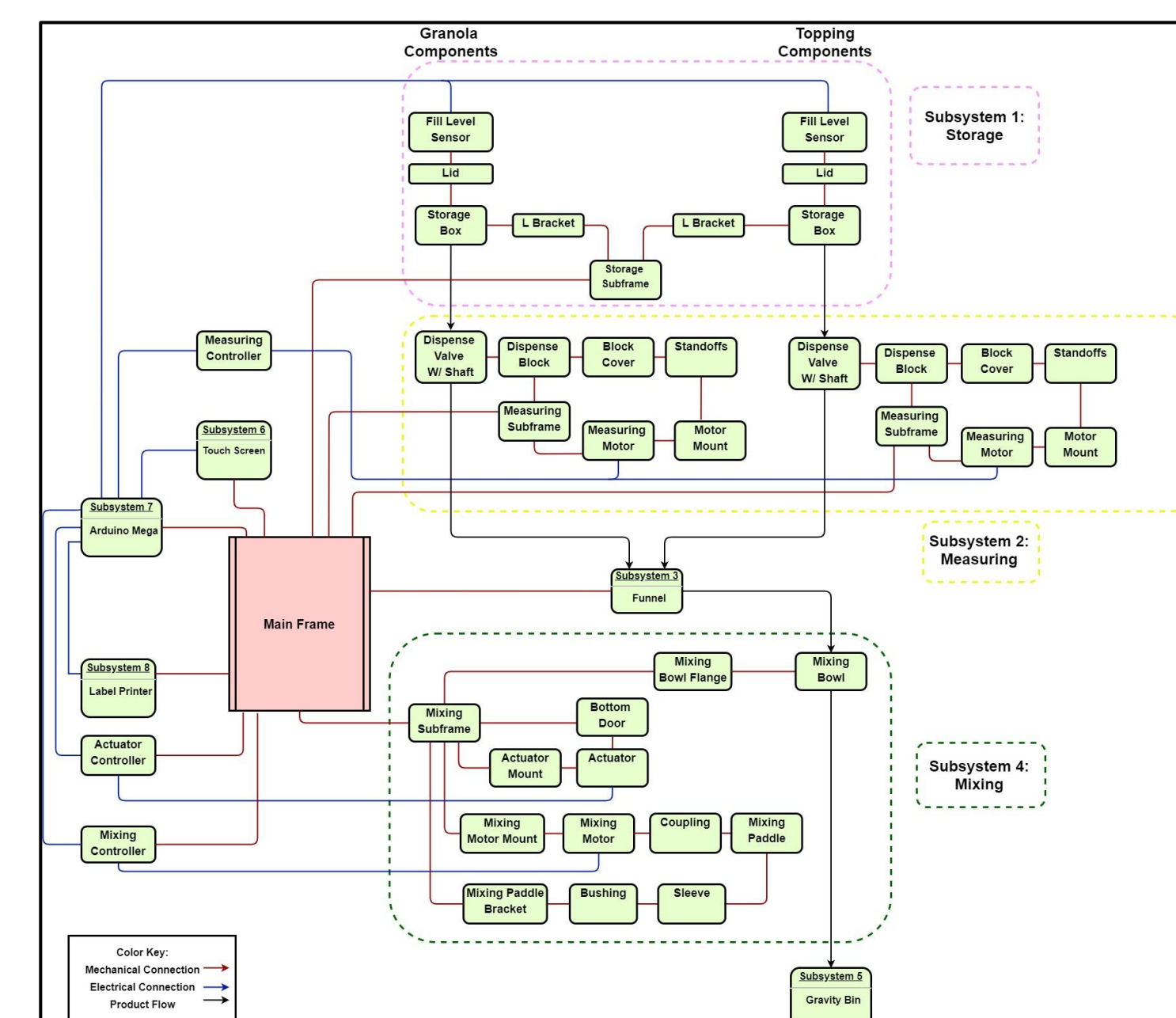
Storage Sensors Subsystem

Dispensing/Measuring Motor Subsystem
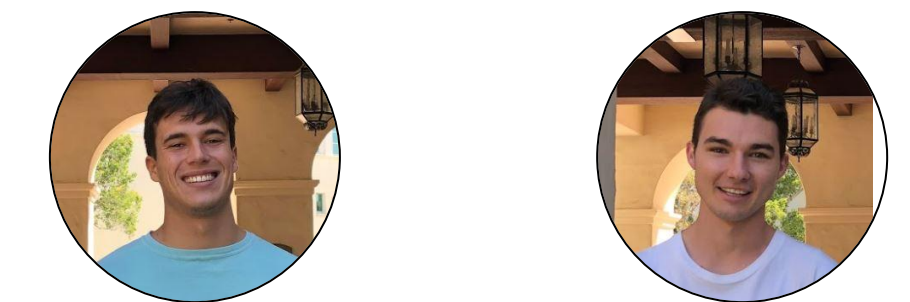
Mixing Motor Subsystem

System Level Diagram

Mechanical Engineering

Anthony Alkatib   Thomas Durso   Austin Whitaker

Tristan Kaskoun   Miles Kiefer

The Smart Granola Kiosk project was a joint effort with the help of a senior mechanical engineering team here at San Diego State University.

The ME team helped with the design and analysis of the dispensing/measuring subsystem, as well as the mixing subsystem. They provided the EE team with critical help concerning the motor selection, the programming and coding of the motor controllers, and the power supply of the system.

Meet the Sponsor

The sponsor for the Smart Granola Kiosk was D&K Engineering. D&K Engineering is a company that specializes in smart kiosks. With their headquarters located in Rancho Bernardo, D&K Engineering was just a short drive away from campus. This allowed the team to frequently meet with them in order to communicate efficiently and effectively.

D&K provided the team with 100% of the funding for this project, as well as a tour of their facilities, engineering advising, and material procurement support.

"Scientists investigate that which already is; Engineers create that which has never been." - Albert Einstein   **Spring 2020**