sdmay20-29: Self-Solving Rubik's Cube
Week 2 Report
September 27 - October 7

Team Members
Taylor Burton — *Systems*
Jacob Campen — *Hardware*
Casey Cierzan — *Materials*
Joe Crowley — *Testing*
Luke Schoeberle — *Software Design*
Annie Lee — *Algorithms*
Patrick Levings-Curry — *Administrative*

Summary of Progress this Report

During this week, we prepared for creating our first prototype. In the hardware realm, we experimented with a large Rubik's cube, magnets, and Hall effect sensors, and we also ordered stepper motors, motor controllers, clutches, and a standard Rubik's cube from ETG. In the software realm, we wrote the basic rotation code, and we learned more about solving algorithms. In fact, a few members can now reliably solve a Rubik's cube.

Pending Issues

We are unsure if our second parts order was submitted, so we will need to verify our order in the upcoming week.
Additionally, before we physically create our prototype, we will need to carefully model the system to determine the feasibility of our current parts.

Plans for Upcoming Reporting Period

Name	Upcoming Tasks
Jacob	• Experiment with the torque needed to turn the cubes • Find specifications of different motor types
Casey	• Contact Lee Harker to verify that the second order was placed • Prepare the cube for prototyping with lubrication, tightening, and sanding
Joe	• Research testing in previous solutions • Continue populating the website
Luke	• Implement more complex rotation code • Improve overall software API
Taylor	• Experiment with the torque needed to turn the cubes • Experiment with the motors
Annie	• Modify open source code for our project • Investigate hardware and software integration

Patrick	- Prepare the cube for prototyping with lubrication, tightening, and sanding - Continue assisting other members whenever they need it

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Taylor Burton	Tested sensors and magnets for magnetic properties; Researched stepper motors and motor controllers	12	24
Jacob Campen	Tested sensors and magnets for magnetic properties; Researched alternatives to clutches	12	24
Casey Cierzan	Ordered stepper motors, clutches, motor controllers, and a normal cube; Contacted Lee Harker to verify that the previous order was placed	12	24
Joe Crowley	Pondered testing procedures; Measured the sizes of the large Rubik's cube's components	12	24
Luke Schoeberle	Wrote basic rotation algorithms; Added enums to improve readability	12	24
Annie Lee	Practiced solving algorithms; Experimented with open-source cube solving programs	12	24
Patrick Levings-Curry	Liaised with staff and faculty; Investigated the large cube's internal structure	12	24

Gitlab Activity Summary
Luke added a gitignore file and pushed a few basic rotation algorithms to the GitLab repo.