sdmay20-29: Self-Solving Rubik's Cube
Week 4 Report
October 19 - November 3

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

Summary of Progress this Report

During this week, we made more progress on our first prototype.
In the hardware realm, we successfully used the stepper motors to turn the large cube's bottom face. Since the motor burned out during this process, we ordered stronger motors for our complete prototype. We also 3D-printed a hemisphere to isolate the cube's internal components.
In the software realm, we tested the rotation code, and we looked more into efficient solving algorithms. We also started to consider software-hardware integration.

Pending Issues

Before we physically create our prototype, we will need to carefully model the system to determine the feasibility of our current parts.
We will also need to ensure that our new motors were ordered properly.

Plans for Upcoming Reporting Period

Name	Upcoming Tasks
Jacob	• Test the magnets and sensors • Test the motor when it arrives
Casey	• Order more parts if needed • Assist Jacob and Taylor with their tasks
Joe	• Test the rotation code more fully • Research hardware-software integration
Luke	• Learn about solving algorithms • Investigate hardware-software integration
Taylor	• Test the magnets and sensors • Design CAD models for the prototype
Annie	• Test the rotation code more fully

	• Implement solving algorithms
Keegan	• Test the motor when it arrives • Design CAD models for the prototype

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Taylor Burton	3D-printed a hemisphere; Determined the necessary specifications for the new motor	12	48
Joe Crowley	Sanded the rest of the large cube; Tested the rotation algorithms	12	48
Luke Schoeberle	Improved rotation API; Tested the rotation algorithms	12	48
Annie Lee	Investigated solving algorithms; Researched hardware-software integration	12	48
Jacob Campen	Turned the cube's bottom face; Determined the necessary specifications for the new motor	12	48
Casey Cierzan	Turned the cube's bottom face; Ordered stronger motors from ETG	12	48
Patrick Levings-Curry	Turned the cube's bottom face; Sanded the rest of the large cube	12	48

Gitlab Activity Summary

Luke pushed some tests for the rotation code to the GitLab repo, while Joe looked over the tests and added a README file. Annie also viewed the repository but did not edit it.