sdmay20-29: Self-Solving Rubik's Cube

Week 5 Report
November 9 - November 18

Team Members

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

Summary of Progress this Report

During this week, we made more progress on our first prototype.
In the hardware realm, we received a stronger stepper motor and successfully used it to turn the large cube once again. However, this stronger motor cannot be physically turned by a user, so we ordered a replacement motor that will satisfy both requirements.
In the software realm, we finished the rotation testing, and we wrote Arduino code for controlling the motor. We also briefly discussed the software components of determining rotations from our Hall Effect sensors.

Pending Issues

Before we physically create our prototype, we will need to ensure that our 3D model of the system contains the correct parts.
We will also need to ensure that our new motors were ordered properly.

Plans for Upcoming Reporting Period

Name	Upcoming Tasks
Jacob	• Investigate specifications for the new motor • Test the motor when it arrives
Casey	• Order more parts if needed • Assist Jacob and Taylor with their tasks
Joe	• Write Arduino code for sensing rotations • Improve Arduino code for controlling the motors
Luke	• Write Arduino code for sensing rotations • Improve Arduino code for controlling the motors
Taylor	• Design CAD parts for connecting the motors to the cube's faces • Test the motor when it arrives
Annie	• Write embedded code for sensing rotations

	• Improve Arduino code for controlling the motors
Keegan	• Assist other members as necessary • Test the motor when it arrives

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Jacob Campen	Tested the new motor; Found a less rigid motor	12	60
Taylor Burton	Tested the new motor; Designed more CAD models	12	60
Casey Cierzan	Tested the new motor; Ordered another motor from ETG	12	60
Joe Crowley	Wrote Arduino code; Tested rotation algorithms	12	60
Luke Schoeberle	Improved software usability; Tested rotation algorithms	12	60
Annie Lee	Wrote Arduino code; Tested rotation algorithms	12	60
Patrick Levings-Curry	Tested the new motor; Assisted other members as needed	12	60

Gitlab Activity Summary

Joe pushed the Arduino code for controlling the Stepper motors, while Luke pushed some improved code for rotation testing. Annie also cloned and tested the code in the repository.