sdmay20-29: Self-Solving Rubik's Cube
Week 3 Report
February 9 - February 23

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

After this week, we are nearing the completion of our first prototype.

In the hardware realm, we 3D-printed an improved sphere with proper holes for the motors, and we inserted the motors within the new sphere as well as possible. We also designed the PCB for controlling the motors, and we will receive the PCB within the next two weeks. At this point, we need to choose batteries for our cube, and we will need to carefully insert the rest of the parts into the sphere.

In the software realm, we expanded the Teensy motor control code, and we made progress on the solving algorithms. Currently, we have completed and tested our solutions to the first layer cross, and we have started on the first layer corners and the second layer edges. We will work diligently on the algorithms in the upcoming weeks.

Pending Issues

We need to ensure that our PCB was ordered properly for the right cost. We also need to determine the best batteries and charging equipment for our application.

Plans for Upcoming Reporting Period

Name	Upcoming Tasks
Jacob	- Design the overall system in more detail - Choose batteries and charging devices
Casey	- Order more parts if needed - Assist Jacob and Taylor with their tasks
Joe	- Finish the Teensy stepper code - Test the Teensy stepper code with the solving algorithms
Luke	- Finish the first layer corners - Start the third layer edges

Taylor	- Improve the CAD model - Choose batteries and charging devices
Annie	- Finish the second layer edges - Start the second layer corners
Keegan	- Assist other members as necessary - Choose batteries and charging devices

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Jacob Campen	Designed the PCB; Assembled the housing sphere	14	111
Casey Cierzan	Ordered new components from ETG; Designed the PCB	13	109
Joe Crowley	Extended the Teensy stepper code; Improved compatibility with solving algorithms	12	109
Luke Schoeberle	Finished the first layer cross; Started the first layer corners	13	110
Taylor Burton	Reviewed the PCB; Assembled the housing sphere	12	110
Annie Lee	Improved her understanding of the cube's data structures; Started the second layer edges	13	110
Patrick Levings-Curry	Researched batteries; Assisted other members as needed	13	109

Gitlab Activity Summary

Joe pushed a few more improvements to the Teensy stepper code and ADC code. Annie pushed a partial implementation of the second layer algorithms, and Luke finished the first layer cross algorithms. Luke also pushed a partial implementation of the first layer corners algorithms.