sdmay20-29: Self-Solving Rubik's Cube

Week 1 Report
January 13 - January 26

Team Members

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

Summary of Progress this Report

During this week, we began the implementation of our first prototype. In the hardware realm, we discussed additional components needed for our prototype, and we tested the Teensy's ability to control the motor and read voltages from the Hall Effect Sensors. We have also improved the CAD model for our prototype, but our model still needs great improvement.

In the software realm, we tested the Teensy stepper motor code and the ADC code. We also improved the rotation algorithm API, and we reviewed cube representations and solving algorithms in preparation for writing solving algorithms. We will begin our implementation of solving algorithms soon.

Pending Issues

We need to ensure that the additional components were ordered properly.

Plans for Upcoming Reporting Period

Jacob	● Design the motor controller ● Improve the CAD model
Casey	● Order more parts if needed ● Assist Jacob and Taylor with their tasks
Joe	● Implement the motor control code ● Implement the rotation detection code
Luke	● Further improve rotation algorithm API for solving algorithms ● Improve the cube's representation in software
Taylor	● Design the motor controller ● Improve the CAD model
Annie	● Further improve rotation algorithm API for solving algorithms ● Implement solving algorithms

Keegan	• Assist other members as necessary • Improve the CAD model

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Jacob Campen	Researched additional components for the prototype; tested the Teensy stepper code	12	84
Taylor Burton	Researched additional components for the prototype; improved CAD prototype	12	84
Casey Cierzan	Ordered new components from ETG; assisted other members as needed	12	84
Joe Crowley	Reviewed embedded systems concepts (ADC configurations); tested the Teensy stepper code	12	84
Luke Schoeberle	Improved rotation algorithm API; considered software integration	12	84
Annie Lee	Improved rotation algorithm API; reviewed simple solving algorithms	12	84
Keegan Levings-Curry	Researched additional components for the prototype; assisted other members as needed	12	84

Gitlab Activity Summary

Joe pushed functional versions of the Teensy stepper code and Teensy ADC code, while Luke pushed some major improvements to the rotation API. Annie also pushed some minor changes to the rotation code.