Group P – Lizzie Rumford, Josh Penko, Collin Barack, Madison Hudak Progress Report Week 9

Instructor – Prof. John Schrock, GTA – Rahel Beyene 3/21/17

Week 9

Situation

The old AEV design was tested on the track and the code was changed after each run to fine tune the run. The code started off getting the AEV close to the gate, and by the end of lab the vehicle got to the gate, triggered the first sensor, waited for it to open, and went through to gently couple with the trailer at the end. The next lab, The group received the custom laser cut part and built the new AEV. This AEV only got one run on the track which did not go well.

Results & Analysis

The groups first sample AEV ran better than expected while on the test track. The group tried a sample code and was able to get the AEV to travel all the way to the R2D2 while meeting all of the requirements to operate the gate. The AEV was also very balanced while running along the track. There were only few instances in which the AEV seemed to be swaying, but the group later determined that this was due to a screw not being inserted all of the way. Also, there was tape on the track which led to the AEV losing balance and falling off. However, once the tape was removed and the screw was correctly placed the AEV ran without any issues. The only problem that was witnessed with the AEV was that the start times can be rather slow. This could potentially be an issue in the future due to there being a time constraint on the project. The group also ran one test with a second AEV design that was the groups actual planned model. However, only one test trial was ran and the groups code led to the AEV running into the gate. This model will need more testing to determine its overall efficiency and stability.

The team designed two codes for this lab. The only way the codes differed from one another is how much power is supplied to the propellers. The first code was one that the team had used before on an older model of the AEV design. This one runs on, at most, thirty percent power. The second code runs at a much higher power percentage, meaning it will move much faster. The new code runs the risk however of flying off the track, or running into the gate; but will complete the tasks at a faster rate than the first code. The older, slower code is more reliable but perhaps less power efficient. Which code works better is heavily reliant upon the weight of the AEV design.

Takeaways

1. Do hardware changes between labs to give as much lab time as possible for testing
2. Review track before testing to ensure that there are no spots that will cause the AEV to derail

Week 10

Situation

In this lab, the team will be testing various codes on the AEV track. Two primary codes will be used; the original, slow code and a second, much faster code. If the code is successful, the team will be asked to design the AEV to work on different tracks. The track used originally for the team's design is the longer of the two available, and the code currently cannot run on a shorter monorail.

Weekly Goals

1. Complete Progress Report and Preliminary Design Review
2. Get the new AEV design to lower gate and retrieve the R2D2
3. Test two codes to compare which would be the most efficient
4. Get data on second AEV design

Weekly Schedule

Task	Teammates	Start Date	Due Date	Time Needed
Week 9 Progress Report	All	3/21/2017	3/22/2017	1 Hour
Preliminary Design Review	All	3/21/2017	3/25/2017	2 Hours
Have new AEV Design perform tasks	All	3/21/2017	3/28/2017	3 Hours total

Appendix A

Date: 3/21/17

Time: 12:40-3:00

Members Present: Lizzie Rumford, Josh Penko, Collin Barack, Madison Hudak

Topics Discussed: Lab 9A Progress Report

Objective:

The focus of today was to complete the Lab 9A Progress Report due on the 3/21/2017.

To Do:

1.) Lab 9A Progress Report.

Decisions:

1.) Test the new design more

2.) Use one sensor instead of two

3.) Improve the code so that more power is supplied to the propellers

Reflections:

1.) Using one part is more reliable and durable than many body parts put together

Appendix B

```
reverse(4);
motorSpeed(4,25);
goFor(3);
// motor runs at 25% speed for 3 seconds
motorSpeed(4,20);
goToAbsolutePosition(412);
// motor runs at 20% speed until position = 394 units PREVIOUS VALUE, NEW VAL 412
reverse(4);
motorSpeed(4,30);
goFor(1.5);
// reverse motors and run at 30% power for 1.5 seconds
brake(4);
// brakes all motors
goFor(5);

reverse(4);
motorSpeed(4,28);
goFor(2);
// motor runs at 28% speed for 2 seconds
motorSpeed(4,20);
goToAbsolutePosition(870);
// motor runs at 20% speed until position = 870 units
reverse(4);
motorSpeed(4,30);
goFor(1);
// reverse motors and run at 30% power for 1.5 seconds
brake(4);
```

```
// brakes all motors
```