Group P – Lizzie Rumford, Josh Penko, Collin Barack, Madison Hudak Progress Report Week 10

Instructor – Prof. John Schrock, GTA – Rahel Beyene 3/27/17

Week 10

Situation

The lab was spent testing the AEV code as well as the general hardware of the vehicle. The AEV in past labs was not working reliably, and it would not stop running on a seemingly random basis. The team projects this is the fault of the wheel sensor, and is taking measures to isolate the reason why. The group also has been working on a code that can utilize gliding in order to allow the AEV to travel efficiently to its target location.

Results & Analysis

The main difference between both codes is the speed at which the AEV moves. Generally speaking, the slower of the two codes is easier to work with because the risk of the vehicle falling of the track is much less than with the faster code. It is also easier to stop a slower-moving vehicle accurately at the gate. In addition to this, the slower coding allows for coasting that is easier to predict; meaning that it is less difficult to tell where the AEV will stop on the track. The team will take into consideration in the future any technical difficulties that may arise. Also, one of the codes will have a focus on gliding the AEV to a desired location. The second code will rely on more hard breaking in order to stop at correct locations.

The team must first get the AEV to complete the mission before they can begin thinking about improving energy. Once the mission is completed, the team will consider adding a coasting option to slow down the AEV without using added power. The problem with this would be having to slow the AEV a lot sooner and therefore making the test as a whole slower. Also, coasting is a lot less reliable than braking because it is less likely to go to an absolute position. The team will also consider finding the lowest speed that the AEV can move the trailer and testing if it is more energy efficient.

The group's plan to complete the full circuit is to use a gliding technique to allow the AEV to use a minimal amount of energy while going around the track. An initial power will be supplied to the AEV at its starting point which will propel it to the desired location. This method will be used to both get the AEV to the R2D2 and to bring it back. This method will require that the AEV be supplied more power on the ride back due to the trailer being attached to the back of the AEV which will increase the overall weight of the system.

Takeaways

1. It will be better to underestimate distances when coding to prevent the AEV from crashing into the gate or the trailer.
2. The group still needs to finish testing on the original code before making the second code.
3. Figure out how to fix the sensor so that the AEV can correctly read its location on the track

Week 11

Situation

This lab period is going to be spent trouble shooting the AEV in order to figure out how to fix the current sensor issue. The AEVs sensor will randomly stop working which causes the vehicle to overshoot its destination by a long shot. The sensor was switched out last week but there was not enough time to test the new sensor. Also, the group will work on finishing the second

Weekly Goals

1. Make the second AEV code.
2. Finish troubleshooting the AEV.
3. Apply finishing touches on the first code

Weekly Schedule

Task	Teammates	Start Date	Due Date	Time Needed
Week 10 Progress Report	All	3/21/2017	3/22/2017	2Hours

Appendix A

Date: 3/27/17

Time: 12:40-3:00

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

Topics Discussed: Lab 10 Progress Report

Objective:

The focus of today was to complete the Lab 10 Progress Report due on the 3/27/2017.

To Do:

1.) Lab 10 Progress Report.

2.) Test if painting flames on the AEV will make it go faster.

Decisions:

1.) Switch from a motorSpeed/goFor function combination to a celerate function in order to retain more accuracy opposed to coasting.

Reflections:

1.) Attempt to run the AEV as far as possible when malfunctioning to see if it stops
2.) Ask questions earlier rather than later when problems arise

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
```