Week 8

Situation

During this week's lab, the team completed the first performance test, which is to make the AEV stop at the first gate. The team developed two sets of Arduino codes to make the AEV stop. The purpose of the different codes is to find the best code possible for the AEV to run correctly and helps the team to develop further coding scenario. The team completed the test by running the two different codes several times with different parameters for the command.

Results & Analysis

The team developed two different sets of code to determine which was better. The first code braked the motors after the AEV travelled more than half of the track and the AEV coasted to the gate. This code's advantage was that it saved energy by not using the motors most of the time, but the AEV travelled relatively slower. The second code was to use propeller in reverse direction near the end to slow down to the gate. Using the propeller to brake the AEV used more energy, and it also caused some more complicated testing due to the extra parameters needed. Each code has the same hardware specific impact, if that one of the motors fail there will be a yaw caused by the thrust which will cause an instability.

During the testing of each code the AEV behaved relatively the same. The vehicle waited for about one second after the motors started and then moved forward. On the straight track the vehicle didn't sway too much, but it swayed slightly when it reached and passed the curve during each test. This was inevitable when the AEV was fast and encountered a turn because of its inertia.

Takeaways
1) AEV -- The is a slight invariance of the distance traveled during each test
2) AEV -- The AEV can be temperamental at times
3) General -- Understanding the AEV systems is crucial to developing code

Week 9

Situation

This week the team goal is to continue to develop and implement the code being developed for the AEV. The team shall reviewed to see if any improvements can be made to the coded system. The team will also improve the redundancy of the system so that it can handle multiple outside variables. This will be done through multiple checks in the system so that the AEV knows where it is relative to the track. The team will also review the energy usage of the system so that the AEV can use the least amount energy possible.

Weekly Goals
1. Continue to work on code to properly stop at gates
2. Continue develop the AEV model

Weekly Schedule

Table 1

Task	Teammate(s)	Start Date	Due Date	Time Need
Progress Report 7	ALL	03/20/17	03/24/17	2hrs
PDR	ALL	03/10/17	03/25/17	4hrs
Develop Code	ALL	03/10/17	03/25/17	8hrs

Appendix

Date: 22 - Mar - 2017
Time: 5:30 (In-Person)
Members Present: Wenbo Nan, Kyle Fathauer, Jason Hahn

Objective: Today's objective was to write the progress report and the PDR report.

To do:
- Write progress report
- Write PDR
- Update portfolio

Decisions:
- Jason will handle the executive summary part of the PDR, while Wenbo and Kyle handled the results part of the PDR.
- The team will continue working on developing the code so that the AEV could stop where it is supposed to stop.

Reflections:
- Even if the AEV works once or twice, being able to retain reliability is priority

Arduino Code for Lab 8 Outside Track Scenario:

```
//Reverses all motors
reverse(4);

//Sets all motors to 25% power
motorSpeed(4,25);

//Tells the AEV to go 350 marks from the beginning
goToAbsolutePosition(350);

//Tells the AEV to reverse the motors
reverse(4);

//Tells the AEV to set all the motors to 50% power
motorSpeed(4,50);

//Tells the AEV to run the previous command for 0.5 seconds
goFor(0.5);

//Tells the AEV to brake all motors
brake(4); //in front of sensor at this point

//Tells the AEV to do the previous command for 9 seconds
goFor(9);

//Tells the AEV to reverse all motors
reverse(4);

//Tells the AEV to set all the motors to 25% power
motorSpeed(4,25);

//Tells the AEV to go 100 marks from the current position
goToRelativePosition(100);
```