Week 10

Backwards Situation

In labs 10A, 10B, and 10C the group continued to test the AEV and make small changes to the code so that it would complete the mission. The team worked on meeting the requirements for the mission, in particular getting the vehicle to reach the first gate, wait for it to open, then continue travelling to pick up the R2D2 unit. This was done through continuous trial and error, where the AEV would run along the track and the team observed when exactly it failed. The code would then be adjusted to get closer to a successful run. The process of making observations and adjusting code continued until the issue was fixed. It was then repeated with the next failure the AEV had in its test runs. These were all done to work towards the goal of eventually working out all the problems the vehicle has so that it can complete the mission as it is supposed to on a consistent basis.

Results & Analysis

The code was switched to use the "goToRelativePosition" function. This allowed for consistency within the code in terms of how much the AEV travelled before power was cut from the motors. It could then be determined based on where the AEV stopped how much farther the AEV should travel in marks rather than guessing how much time should be added and hoping the AEV travelled the extra marks necessary to reach the next step and continue the mission. The AEV completed the mission almost perfectly in the first day after switching the code from travelling for a specific time to travelling for a specific distance before the motors were shut down. Once the AEV was needed to be stopped manually, but other than that, the AEV completed all the other steps without manual help. The step that was consistently causing problems was the third part of the mission after the AEV picked up the cargo. The AEV either travelled too far or not far enough, but every other part was completed correctly and consistently. It should be noted that this was accomplished on the track in room 224. On the other track, in room 308, significant changes were needed in the code in order to accomplish the mission. For example, the second half of the mission required 23 more marks to reach the cargo. In addition, the AEV needed an extra 50 marks to complete part 3 of the mission. The first part also needed a change in marks , but rather than add more, the AEV needed less marks to reach the gate in room 308 compared to room 224. The motor speed was also adjusted in room 308, but just for one part of the mission (part 4). The motor speed was increased by 20 percent power in the fourth part of the mission (in room 308) in order for the AEV to build up more momentum and so that the AEV would not get stuck on the track after waiting at the gate in the return trip with the cargo. Neither room experienced a perfect run, but the code for room 224 was much more successful than room 308. The run in room 224 took one minute and 19 seconds to complete, while the other run (room 224) was not timed.

Takeaways

1.) The code needs to use positioning rather than time.
2.) The whole run should be tested rather than just a small part so that several observations and adjustments can be made for each trial.

3.) The team did a good job of splitting up responsibilities, we have more than one person who works more with coding so that we do not lose any time if one of them misses a class.

Week 11

Forwards Situation

The next week will consist of the final testing for the AEV. The periods will be spent using the AEV to complete the mission given to the team of engineers. The vehicle will have to successfully stop in front of the first gate, pick up the R2D2 unit, stop in front of the gate again, and return to the original starting point.

Weekly Goals

-Make sure that the code is finalized and ready to perform
-All errors in the construction of the AEV to be resolved
-Ensure that the AEV successfully connects to the the R2D2 unit at all times
-Complete PDR Presentation

Weekly Schedule

Task	Teammate(s)	Start Date	Due Date	Time Needed
Lab 10 Progress Report	All	3/23/17	3/30/17	3 Hours
Lab 10A	All	3/30/17	3/30/17	55 Mins
Lab 10B	All	4/4/17	4/4/17	55 Mins
Lab 10C	All	4/5/17	4/5/17	1 Hour 20 Mins
Update Portfolio	Adam	3/23/17	3/30/17	30 Mins

Code for 308

```
reverse(1);
celerate(4,0,25,.5);
motorSpeed(4,25);
goToRelativePosition(274);
```

```
brake(4);
goFor(14);
celerate(4,0,25,.5);
motorSpeed(4,25);
goToRelativePosition(298);
brake(4);
goFor(12);
reverse(4);
celerate(4,0,40,.5);
motorSpeed(4,40);
goToRelativePosition(-390);
brake(4);
goFor(10);
celerate(4,0,40,.5);
motorSpeed(4,60);
goToRelativePosition(-300);
brake(4);
```

Code for 224

```
reverse(1);
celerate(4,0,25,.5);
motorSpeed(4,25);
goToRelativePosition(286);
brake(4);
goFor(13);
celerate(4,0,25,.5);
motorSpeed(4,25);
goToRelativePosition(275);
brake(4);
goFor(12);
reverse(4);
celerate(4,0,40,.5);
```

```
motorSpeed(4,40);
goToRelativePosition(-340);
brake(4);
goFor(10);
celerate(4,0,40,.5);
motorSpeed(4,40);
goToRelativePosition(-365);
brake(4);
```