

Week 8

Situation:

In last week's lab, the team completed and presented the Preliminary Design Review (PDR) Oral Presentation. In completing this presentation, a clearer path has been made in terms of what will need to be done in the coming weeks. A final design must be decided upon. Josh's design will be used unless testing this week proves the scoring matrix to be inaccurate in terms of balance or consistency. Balance and consistency were deemed to be the most important criteria. Our most important goal is completion and assurance that come test day, the AEV will perform without doubt, and balance and consistency are the best ways to ensure this. Along with these two main goals, other goals such as safety and efficiency were weighed and evaluated.

Results and Analysis:

After last week's PDR Oral Presentation, Team H feels confident in their work and shall continue to test the two designs they have at hand. The first design was shown in the presentation. It has angled wings, and the caboose is more compact to reduce unnecessary parts which in turn reduces the overall weight of the AEV. It has already been tested to the reference AEV, which can be seen in appendix part a. The next design Team H is considering is like the first but it will have a rubber strip to increase friction and make it easier to stop the AEV. Team H is also considering 3D printing a part to this design, which still has to be determined. However, Team H knows that 3D printing can be beneficial and offer the team a more flexible approach to making the AEV fulfill the project requirements and reduce weight.

Takeaways:

1. Continue to work to the PDR (due Lab 9B)
2. Continue to work on the code to complete PT1 and score test designs
3. Consider possible part to have 3D printed
4. General- The Oral Presentation went according to plan for Team H, who received an A

Week 9

Situation:

The upcoming week is shortened due to spring break. The team has two work sessions on Tuesday and Wednesday to prepare for the first performance test. The first performance test will compare two different designs to decide which one to go forward with. The designs will be tested based from criteria which we deem important. Team H would like to test two main things during the two days of work we have. We would like to test both of our designs running with the caboose, because we are unsure of how that will affect the performance of either design, and it may change how the two designs are viewed going forward.

The next big thing we want to test is the effect of placing rubber grips on the wheels on the AEV. It is hypothesized that this step might help the AEV start and stop concisely, however it is unsure as to how this will affect the efficiency of the AEV. One last minor objective the team has this week is to decide once and for all if we want to 3d print a part, because it must be submitted before spring break if the group decides to do so.

Weekly Goals:

- Test both designs running with the caboose to decide which will handle it better
- Create, and implement rubber strips on the wheels
- Test the effects of the rubber strips on the performance, and efficiency of the AEV.
- Decide if a 3D part is necessary, and if so, submit it for printing by Friday.
- Go into spring break feeling good about the project and the team

Weekly Schedule:

Task	Start	End	Members Involved	Approx. Time
Test Both Designs with Caboose	3/7	3/7	Josh Nate	1 hour
Design Rubber Strips	3/7	3/8	Jesse Bret	1 hour
Test rubber strips on preferred design	3/8	3/8	All	30 min
Confer over 3D printing part	3/7	3/7	All	15 min
(If decided part is needed), design	3/7	3/9	Josh	2-3 hours
Team Meeting (meet before spring break to make sure everybody is good going forwards)	3/8	3/8	All	2-3 hours

Appendix

Part A:

Matrices

		Scoring Matrix			
		Reference		Josh	
Success Criteria	Weight	Rating	Weighted Score	Rating	Weighted Score
Balance	20%	2	0.40	3	0.60
Center of Gravity	5%	3	0.15	4	0.20
Power Efficiency	15%	3	0.45	3	0.45
Cost	10%	3	0.30	3	0.30
Weight	10%	3	0.30	3	0.30
Aerodynamics	15%	3	0.45	4	0.60
Consistency	25%	4	1.00	4	1.00
Total Score		3.05		3.45	
Continue?		No		Develop	

Figure 1

Screening Scoresheet					
Success Criteria	Reference	Jesse	Josh	Nate	Bret
Balance	0	0	+	0	0
Center of Gravity	0	0	+	0	0
Power Efficiency	0	0	0	0	0
Cost	0	+	0	0	0
Weight	0	+	0	0	0
Aerodynamics	0	0	+	0	0
Consistency	0	0	0	0	0
Sum +	0	2	3	0	0
Sum -	0	0	0	0	0
Sum 0	7	5	4	7	7
Net Score	0	2	3	0	0
Continue	Revise	Yes	Yes	Revise	Revise

Figure 2

Part B:

Arduino CodeInside Track

```
motorspeed(4,25);           //Set all motors to 25% power
goFor(2);                   //Runs last command (all motors 25% power) for 2
sec

motorspeed(4,20);           //Set all motors to 20% power
goToAbsolutePosition(332);  // Continue previous command (all motors at
20%)
until the vehicle reaches 332 marks (13.5 ft) relative to the absolute starting position
reverse(4);                 //Reverse polarity of all motors
motorspeed(4,30);           //Run all motors at 30%
goFor(1);                   //Run last command (all motors 30% power) for 1 sec
brake(4);                   //Stop all motors
```