

Week 7

Situation

The team over the past several weeks have been given the task to brainstorm, and now create what the team believes to be the most energy efficient and well equipped AEV to accomplish the task of transporting cargo along the track. The team has taken into account criteria to focus on through decisions matrices to hone in certain aspects of the AEV. As the team moves forward it is now the job of the individuals to use the knowledge they have gained through the first half of the semester to apply those skills to create the best AEV possible possible. The team's discussed all this and more through a presentation to the class last week.

Results and Analysis

Up to this point of the creation process, the team has gained knowledge that will eventually lead to the team's overall creation of the AEV. This included, but is not limited to: documentation, construction, troubleshooting, data analysis, and code writing of the AEV. In terms of the team's priorities of the AEV , they were discussed and debated between the team. Through past experiences and prior knowledge the team really wants to focus on minimizing weight and center of balance as these 2 factors is what the team believes are the two most important aspects. Because of this, these will be the two aspects the team will test. There is a slight hindrance in the tests however, due to the fact that the team still needs to cut out the new base created by the team to drastically reduce the weight.

Concept Screening

Success Criteria	Reference	Tyler's	Albert's	James'	Carlos'
Balanced Turns	0	+	0	0	0
Center of Gravity	0	+	+	0	+
Weight	0	-	+	0	+
Cost	0	-	0	0	0
Simplicity	0	-	+	0	+
Maintenance	0	+	+	+	+

Durability	0	-	0	0	0
Aerodynamics	0	+	0	+	0
Aesthetics	0	+	0	-	0
Sum of +'s	0	5	4	2	4
Sum of 0's	9	0	5	6	5
Sum of -'s	0	4	0	1	0
Net Score	0	1	4	1	4
Continue?	No	No	Yes	No	Yes

Scoring Spreadsheets

		Reference		Albert's		Carlos'	
Success Criteria	Weight	Rating	Score	Rating	Score	Rating	Score
Balanced Turns	15%	4	0.60	5	0.75	4	0.60
Center of Gravity	15%	4	0.60	5	0.75	5	0.75
Weight	20%	4	0.80	4	0.80	3	0.60
Cost	10%	5	0.50	4	0.40	4	0.40
Simplicity	10%	4	0.40	5	0.50	4	0.40
Maintenance	10%	5	0.50	5	0.50	5	0.50
Durability	14%	4	0.56	5	0.70	5	0.70
Aerodynamics	3%	5	0.15	4	0.12	5	0.15
Aesthetics	3%	4	0.12	3	0.09	5	0.15
Total Score			4.23		4.53		4.25
Continue?			No		Yes		no

Above is what helped the team decide which aspects were most important, and which design which design the team will be moving forward with.

Takeaways

- AEV must be balanced to stay on the track, weight properly distributed
- Weight is a significant factor of the design
- Aerodynamics have negligible effect on the AEV
- Lower power settings for longer times use less power overall
- Functionality takes precedence over aesthetics
- Inherent inconsistency due to different batteries each lab test session
- Higher speed not necessary advantageous

Week 8

Situation

Last week is the midpoint of the whole project. The team have made presentation about what learned in last several labs. From week 8, the team have three labs every week and several tasks will be complete for every lab “week”. Every progress report should be finished before every lab and contain what the team have learned in this lab and what will the team do in next lab. Performance test in an important way to determine whether the design is good or not. During performance test, the team should consider the purpose of the test and the methods of test. In every process report, the team need to report the last performance test which made by team about its completeness and description. The team will create two different AEV vehicles designs and determine which one is better for performance test 1. In order to compare these two different designs, the team will consider the test strategies. After the performance test, the team will discuss and make conclusion about which design is better. In addition, the team will write code to make the vehicles to implement tasks and analyze in lab 8.

Weekly Goals

1. Create two different AEV designs
2. Write codes to make the AEV implement tasks
3. Consider the strategies used in the performance test and do the test
4. Discuss and analyze the conclusion

Weekly Schedule

Table 1: Week 8 Schedule

Task	Teammate(s)	Start Date	Due Date	Time Needed
Assemble two different AEV	Albert, Carlos	<u>3/7/17</u>	<u>3/7/17</u>	<u>1 hr</u>
Write codes	Albert, Carlos	<u>3/7/17</u>	<u>3/7/17</u>	<u>1 hr</u>
Performance test	Tyler, James	<u>3/7/17</u>	<u>3/7/17</u>	1hr
Progress Report Summary	Carlos,	<u>3/7/17</u>	<u>3/14/17</u>	<u>2 hr</u>

	James Tyler Albert			
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Appendix

Team Meeting Notes

Date: 23-Feb-2017

Time: 4:00 pm (Face to Face)

Members Present: James Pfeifer, James Albert Hsu, Tyler Wang, Carlos Perez-Oviedo,

Topics Discussed: Presentation for Preliminary Design Report

Objective:

Organize the sections of the presentation and practice them so that we could be prepared for the actual presentation the following Wednesday. Furthermore, the overall power point was already created so only final revisions were made during the meeting. While this did not take a majority of the time, we readdressed critical content items with regard to looking forward and next steps for our project.

To do/ Action Items:

- Revise the looking forward section
- Divide up sections of the presentation so that everyone participates during the presentation
- brainstorm creative ways to add extra items to the presentation
- practice eye contact and fluidity so that presentation next week is smooth

Decisions:

- Looking forward decision emphasized mission statement which was to go with a laser cut material instead of the provided material
- Furthermore, we added context for AEV and autonomous vehicles in society as an introduction and conclusion to add creativity
- Each teammate responsible for 2-3 slides

Reflections:

- Practice times were all between 6 minutes and 8 minutes

Team Meeting Notes

Date: 27-Feb-2017

Time: 1:50 pm (Face to Face)

Members Present: James Pfeifer, James Albert Hsu, Tyler Wang, Carlos Perez-Oviedo,

Topics Discussed: Presentation for Preliminary Design Report

Objective:

Practice the presentation

To do/ Action Items:

- Have everyone go over their part individually twice for the group and then once all together to ensure confidence and understanding of material and time

Decisions:

-Last minute revised the problem solving slide and cut down on context to shorten slightly

Reflections:

-Final practice time was 7 minutes and 12 seconds

Arduino Code

```
// Propels AEV forward 13.5 feet
motorSpeed(4,30);
goToAbsolutePosition(332);
// Reverses motors to act as brake
reverse(4);
motorSpeed(4,40);
goFor(2);
// Cuts power to motors
brake(4);
```