Group I – Carlos Perez-Oviedo, James Pfeifer, Albert Hsu, Zhanhao Wang Progress Report Week 5

Instructor - Professor Shrock, GTA - Sheena Marston
2/22/17

Week 5

Situation:
The team was posed the task of assembling the team's designated AEV and running a simple code on the straight track. To determine which AEV would be used moving forward the team created a concept screening and scoring spreadsheet chart. The team had to come together and agree on which concepts would be most important to the success of the AEV as well as which concepts were of more importance than others. The team moved on and voted on each criteria.

Results and Analysis:
The run on the straight track seemed to contradict the AEV's past success of the normal track. When the code was run through very quickly and only moved about 4 inches forward and backward. What was able to be observed was: the AEV was stable on the track, it moved in the correct direction, and it seemed to not have enough power to truly propel the AEV as it had done in previous labs. After the run on the track was completed, the AEV was moved to the normal track to run the AEV from one gate to another, which worked well after the power was adjusted.

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**

By utilizing the concept screening and the scoring spreadsheet the 4 designs created by the team were compared. The group analyzed and decided on criteria that what the group believed would lead to success. After weighing the importance of each criteria, Albert's design is the design that the group will move on with. Despite Albert's design being chosen, all the other design had strengths as well

weaknesses. Tyler's design was very complex with a very aesthetically pleasing design; however the team decided that simplicity was very desirable. With James' design, aerodynamics was the most appealing aspect of the design as the nose and wings were curved to "bend" through the air. Discussion with the team concluded that the AEV's small design as well as relatively slow speeds would deem air drag negligible. Carlos's design was very similar to Albert's. A conclusion was reached that the extra wings was not worth the extra weight, thus ultimately leading to the continuation of Albert's design.

Takeaways

- Creating charts to analyze different models
- Comparing different models to reference
- How to determine which models continue to testing
- Weighting categories to emphasize design features
- Selecting final designs

Week 6

Situation

In the lab 6, the team will finish the PDR Presentation Worksheet which contains the points which will be included in the presentation. Also, the team need to answer several questions which are listed in the AEV_Lab_Manual. The Lab 6 is a midpoint for the AEV project, the team will take LPQ (Lab Proficiency Quiz) which is used to test the team's AEV including the device and the programming part. The instructor and TA will go around in the classroom to check the project portfolio and the information which should be updated. In addition, the PDR presentation worksheet will also be checked because the Instructional team wants to know if the team are ready for the presentation in Lab 7. If there are extra time for the lab, the teammates will communicate with each other and ask questions if the team have any problems.

Weekly Goals

1. Finish the PDR presentation worksheet
2. Take the Lab proficiency quiz

Weekly Schedule

Table 1: Week 6 Schedule

Task	Teammate(s)	Start Date	Due Date	Time Needed
PDR presentation worksheet	Albert, Carlos	2/22/17	2/22/17	1 hr
Take LPQ	Tyler, James	2/22/17	2/22/17	1 hr
Progress Report Summary	Carlos,	2/22/17	2/29/17	2 hr

	James Tyler Albert			

Appendix
Team Meeting Notes:

Date: 16-Feb-2017
Time: 4:00 pm (In person meeting)
Members Present: James Pfeifer, Albert Hsu, Tyler Wang, Carlos Perez-Oviedo
Topics Discussed: Post Lab, Presentation, Website

Objective:
Today's focus centered around creating the presentation for the project, in addition to uploading and addressing the website for the project.

To do/ Action Items:
-Everyone make an account for the website
-add everyone to the project website
-upload pictures and progress reports to the website
-rough outline of powerpoint for project
Decisions:
-speaking order for the presentation, in addition to style for the presentation. A conclusion was not reached

Reflections:
-Business formal is a good idea for the presentation since its conveys serious nature and professionality of the project and the audience which is a group of engineering students at a university in a class which they are all paying for.

Arduino Code

Scenario Code

```
// Gradually accelerates motors
celerate(4,0,25,3);
// Runs motors at constant speed for two seconds
motorSpeed(4,20);
goFor(2);
// Reverses motors and acts as brake
reverse(4);
motorSpeed(4,25);
goFor(2);
// Cuts power to motors
brake(4);
```

Testing 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);
```