Week 3

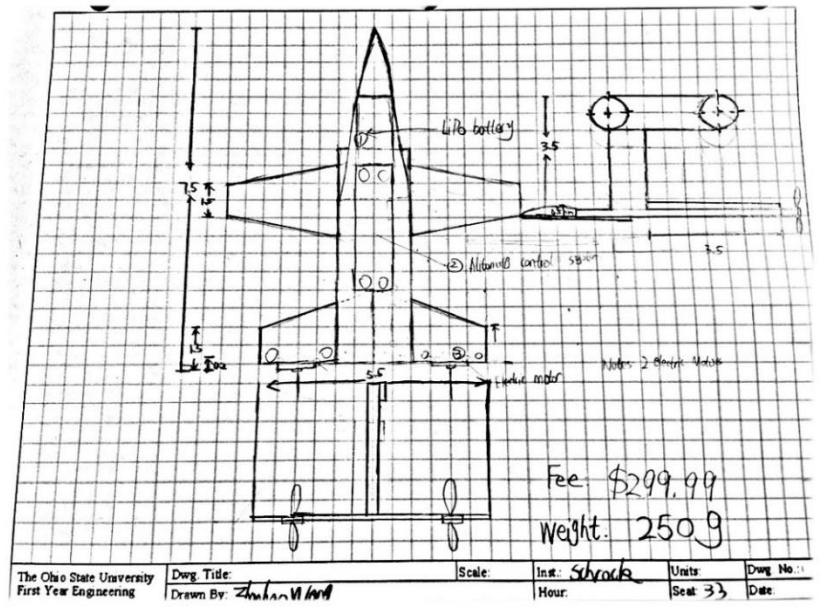
Situation

This week in lab, the group was assigned the task of brainstorming concepts for the AEV. The team began by individually brainstorming our own design for the AEV. After doing so the group came together and discussed ideas for the AEV. Due to the lack of time and other responsibilities such as continuing to resolve issues of the previous lab, the group design was not completed. Each engineer had to take into account the considerations of the AEV when completing their design.

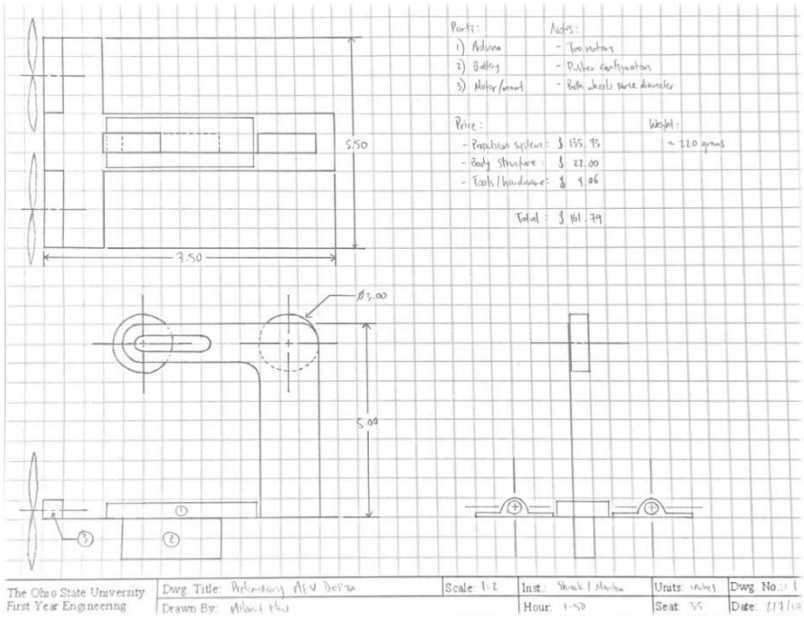
Results and Analysis

Each design took into the consideration of completing the MCRI, but some aspects were focused on more than others. Carlos' design took the greatest consideration of weight. By minimizing the weight, the less power would be needed. Albert's design also took this as the most important aspect of the AEV. Both are very similar in that they are simple in design with no extra parts. Carlos' AEV took aerodynamics into consideration by adding the curved wings. Additionally, both designs had no extra parts printed, and practically used the bare minimum of parts needed to construct a functional AEV. Aerodynamics may or may not have a huge factor in maximizing power input to output, but James' design took that into account as his AEV is the sleekest of all the designs as extra wings are placed on the sides of the AEV as well as the addition of the point at the front. Tyler's design took aesthetics into play as his addition of parts makes the AEV look like a real life fighter jet, however as his distribution of weight may cause for better balance, there is not much being done to improve the mission. There was no specific technique used to brainstorm. Most of the ideas were generated individually. For both Tyler and James designs, both need parts printed from the 3D printer. Other than the plastic from those unique parts, all the other materials are consistent with the AEV kit.

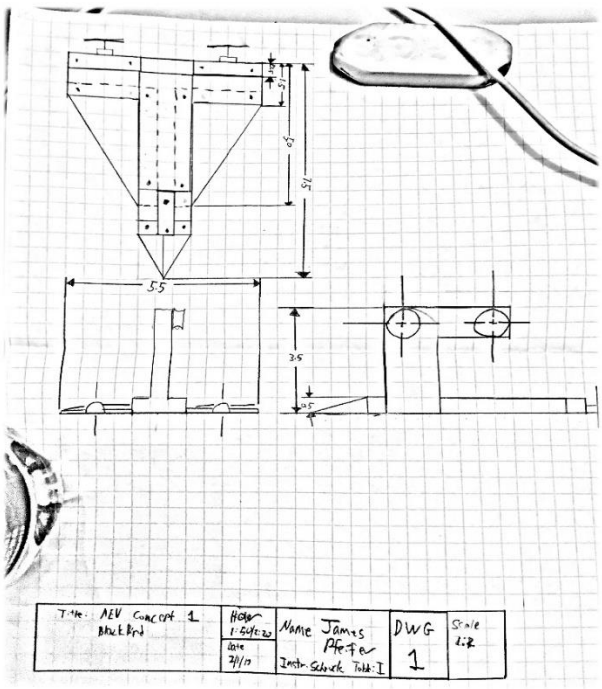
Tyler's Prototype:



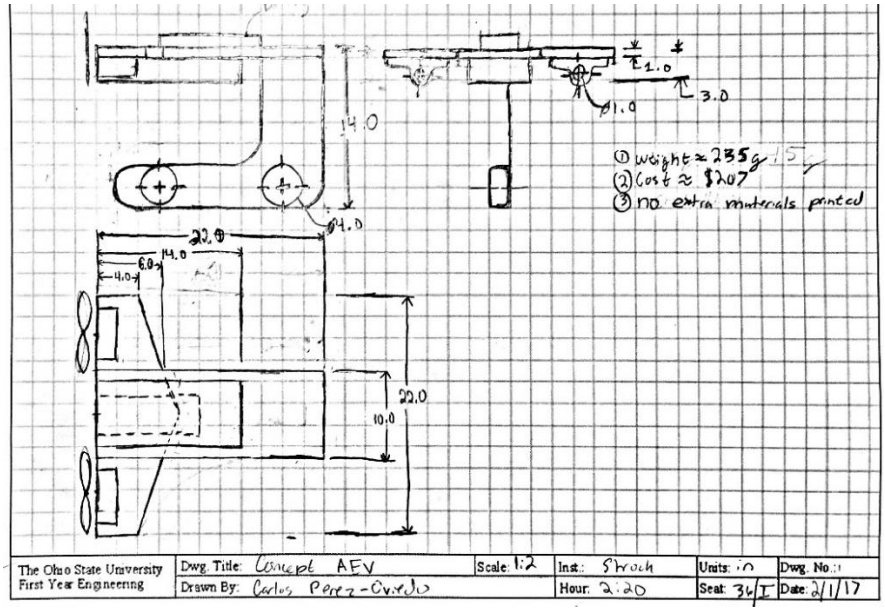
Albert's Prototype:



James' Prototype:



Carlos' Prototype:



Takeaways

1. Brainstorming process
2. AEV orthographic projection
3. Further analysis of the MCRI
4. 1st design on the AEV
5. Estimated cost and dimensions

Week 4

Situation

The lab 4 are separated by two parts. For part 1, the team will use EEPROM to record the data when the vehicle is running on the track. And then these data will be converted to physical parameters like Time, Current and voltage which will be easily calculated and the team will get the other important data like power, incremental energy and total energy. The sentences above are the purposes of the lab. In the lab, the first step is to write codes for an AVE test run. After the vehicle running, the team will download the data which recorded by EEPROM. However, the team cannot use these data directly this time. The team will covert these data to physical parameters which can used to analyze. Power and energy input will be calculated by using functions of other variables and approximation methods. How to analyze the data is an important question. In this lab, the team will use the graph which contains different plots and phases and make a table to separate and collect the data. Moreover, when the team do the performance analysis calculations, the MATLAB will be used. In this case, the team will install and run MATLAB and download Arduino data which record by EEPROM.

Weekly Goals

1. Download the data which record by EEPROM
2. Convert the data to physical parameters
3. Use tools analyze and calculate energy and power
4. Apply math methods to deal with the data

Weekly Schedule

Table 1: Week 4 Schedule

Task	Teammate(s)	Start Date	Due Date	Time Needed
Download data and Convert data to physical parameters	Albert, Carlos	2/8/17	2/8/17	1 hr
Calculate the power and energy	Tyler, James	2/8/17	2/8/17	1 hr
Progress Report Summary	Carlos, James Tyler Albert	2/8/17	2/15/17	2 hr

Appendix: A

Team Meeting Notes

Date: 06-Feb-2017

Time: 2:00 pm (GroupMe-Meeting)

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

Topics Discussed: Post Lab

Objective:

Today's focus was on writing our next progress report and creating different, effective designs for the AEV.

To do/ Action Items:

-Have all members submit a dimensioned idea for the AEV.

-Discuss the different designs.

-Identify different tasks needed to attain each design.

-Come close to deciding a vehicle design.

Decisions:

-Some of the designs require 3D printing, and therefore would need to submit a solidworks design.

Reflections:

-A final design was not selected yet due to the group's uncertainty over the additional work components from 3D printing.