

## Client Meeting

**Date:** Wednesday January 24, 2018 2:00-2:30Pm.

**Location:** Dr. Lerner's Office

**Lead Person:** Hannah Rentschler

**Minutes Recorder:** Hannah Rentschler

**In Attendance:** Dr. Lerner, Azalea Grant, Ethan Michel, Brandon Begay, Robert Libby, and Hannah Rentschler.

### **Executive Summary:**

Presented the current state of the exoskeleton device to Dr. Lerner and held a follow up discussion with the team outlining tasks for next week.

### **Minutes:**

The team presented the lever design exoskeleton as the design that the team intends to take forward. The exoskeleton will be controlled by a tension sensor mounted between the base plate and the foot plate, and a potentiometer connected at the hinge.

Dr. Lerner suggested that the team test the controls of the exoskeleton and the mechanical behavior of the actuated cable attachment on a plastic prototype prior to machining the fully functioning model.

The team decided to test like Dr. Lerner suggested but also still continue machining the exoskeleton parts. The team decided on this course of action because even if the controls or cables do not work as intended the mechanical assembly could be adjusted for design updates.

### **Meeting follow up:**

After the meeting with Dr. Lerner the team met to discuss what was accomplished this week and to set goals for next week.

This week:

Azalea started getting the foot plate and base plate files converted into CNC file for manufacturing. She also designed a method for connecting the tension sensor to the plates.

Robert wrote some code for the control of the exoskeletons via the potentiometer and tension sensor data. He also sent the data sheets of the sensors to the team.

Hannah compiled a list of parts needed for the working prototype and found where each part/material could be purchased. She also made some design adjustments to the lever arm and pulley bracket to ensure that they can be machined quickly and easily.

Brandon designed the potentiometer mount to the exoskeleton hinge and started designing a torque sensor attachment to the hinge. He also researched methods for reducing friction in the hinge one of which includes using graphite lubricant. Brandon also submitted the latest parts order for the working prototype.

Ethan did a structural analysis on the lever arms and found that they will not bend when positioned at angles less than 30 degrees. Ethan also made some designed changes to the motor assembly so that the parts can be machined by the team.

#### **Goals for next week:**

Azalea

- Do calculations for the spring that is needed in series with the tension sensor and find a supplier
- Begin machining the plates and lever arms

Hannah

- 3D print the new design
- Help Robert test the sensors and controls on the 3D design
- Help Azalea manufacture the plates

Ethan

- Continue structural analysis
- Redesign motor mounts and cable mounts in the motor assembly
- Help Azalea with manufacturing

Brandon

- Meet with capstone budget coordinator and ensure that our budget is correct
- Finish torque sensor mount
- Help Azalea with machining

The primary goals for next week are to have the base plate fully machined and some sensor results from the 3D model by Monday evening. By Thursday evening the team hopes to have the lever arm and foot plate machined as well.