Work Completed

This week was the final week of fabrication and as a result demanded a significant amount of work. Most of the easel itself had been assembled which left me to complete the wiring. I began wiring the vertical motion actuator by drilling a hole through its resting plate and passing the wires to it below the edge of the frame. The wires from the horizontal motion motor were passed vertically down through the center of the aluminum tubing. There they met the wires from the vertical motion actuator and were combined into a 4 pin plug. This plug was important to allow the frame of the easel to be disconnected from the base. Two diodes were installed on both the left and right sides of the horizontal screw drive along with microswitches to prevent the canvas from traveling beyond its limits. The diodes allow the current to be reversed (thus reversing the motor) even though the microswitch is activated.

The joystick was installed into the aluminum box and an illuminated on/off switch was placed into a square hole created in the box allowing the joystick to be turned off. The six motion options (up/down/left/right/tilt towards/tilt away) as well as a 12VDC power and ground lines were wired into a male end of a D9 subminiature connector (serial port). The female end was installed on the side of the easel. This allowed the joystick to be easily connected via an inexpensive serial cable. The outputs of the serial
port on the easel were then run to the appropriate relays to trigger the actuators. The tilt actuator was also wired through the tubing of the easel base and met all the other wires which then entered the enclosure containing the power supply.

This task proved to be quite difficult and time consuming as all the wires had to be hidden within the easel and a range of travel had to be incorporated into wire lengths. For example, the vertical motion motor itself travels 6” therefore needing a free moving wire. Pictures of the easel during its wiring phase can be seen in the photos below.

Figure 1: Plug for detaching easel frame
Figure 2: Relays and powers supply being wired

Figure 3: Electrical Component Enclosure
Future Work

Over the next week we will be working to clean the easel up and prepare it to be given to our client. We will also be working on the user’s manual as well as the final report and presentation.

Project Review

The final week proved to be quite difficult, but as expected the project was completed on schedule and functions as desired. We will continue to work on the project adding minor details and also have all reports and requirement ready for their presentation in the following weeks.

Hours Worked

This week required a very significant time commitment. Between traveling to various stores for supplies as well as actual time spent in the lab, over 35 hours was dedicated to completing the project successfully and on time.