Week 7
Stephen Heussler

Project Identity

Freely Adjustable and Accessible Keyboard and Arrow Pad for Client with Cerebral Palsy

Work Completed

This week Noland and I continued our work on the keyboard and arrow pad, after receiving input from Miriam and Sam’s team. I continued work on finishing the PCB, while Nolan continued his work on programming the control board for the keyboard.

On Wednesday Miriam and Sam’s team met, and they decided on a final keyboard design for Sam. They chose the five row keyboard, and asked for us to make some simple changes to the layout. Figure one below shows a top view of the final design for the keyboard.

As requested, we enlarged the backspace, and switched the layout of the Tab and Caps Lock keys. As you can see, there is leftover space on the left side of the keyboard, because this is where the control board must be placed. To make it more aesthetically pleasing, Nolan and I are thinking of putting a Yankees symbol (Sam likes the Yankees), or some sort of design to cover up the blank space.

After receiving the final design, I got to work on the keyboard, while Nolan continued his programming of the keyboard.

Visio was a great tool in figuring out the distances between the relative keys, helping my design in PCB Express. After I had all the switches in the
correct positions, I started wiring everything together. This proved a harder task than I had anticipated, mainly because everything is so close together. Then when I got to wiring the LEDs, it became really complicated. I was able to complete the wiring by using filled holes to connect the top and bottom layer of wiring. Below in Fig. 2 is an image of the PCB at this moment.

![Keyboard PCB](image)

Figure 2. Keyboard PCB

This PCB obviously needs some cleaning up, but the wiring direction is set, and everything is connected where it should be.

We are using fewer LEDs for backlighting than was originally anticipated. This is because the board is already crowded enough as it is, and two rows of LEDs is sufficient for our backlighting needs.

The snow cancellation on Friday and the fact that our computer fried over the weekend set us back a little bit. Nolan cannot continue programming the control board until we have our computer fixed.

**Future Work**

This week Nolan and I plan to complete our PCB and review it with Bill. After he has reviewed it, we plan to submit it for pricing.

We also plan to start building the case for the keyboard. I have been machine shop certified over break, so Nolan and I can use the machine shop to cut our PVC to the correct dimensions.

Nolan will also continue to program the control board, and will soon finish with the program.
Project Review

Our project has been moving along smoothly and on schedule. We may have been slow at the beginning, but now we have caught up and should be done within four weeks. Nolan has mastered programming the control board, and after our PCB has been ordered, we only have to solder all the pieces and the electrical part of our project will be complete. After that we only have to design the keyboard case and Sam’s hand grip and we will be done.

Hours Worked:

~12