1. PROJECT IDENTITY:  
HEAD & ARM MOUNTED ART DESIGN SYSTEM  
Week 7  
3/18/2007  
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2. WORK COMPLETED:  
This was a very productive week even though a snow storm resulted in a cancellation of the senior design lab class. The most important issue was our issue of figuring out what to do with the TASH eye blink switch. After I thought things through I realized that we needed to create a system which would translate the switch detection into a signal which would turn the motor on. Everyone was a bit unclear on this so it took some time to clarify the issue.

The way the switch works is that when a person blinks purposefully, a green light on the switch box turns on and then goes off to show activation. With each purposeful eye blink action from the user, the green light blinks on the switch. There are time when the user blink normally but the system is activated anyways. I called the TASH company and spoke to a representative who said that this was a natural flaw with eye blink sensors. After some thinking I decided that if we were able to input a delay into the circuit elements then only blinks which are for example two seconds or longer will cause the system to activate. Basically I purpose of the blinking light is to show if the sensor is in place or not, because if it was not in the correct location then the light will not blink.

After our group meeting I went and spoke with Dr. Northrop and discuss a proper method of translating the detection of a blink into a mechanical function. Together we devised a potential circuit design composed of two one shot multivibrators also known as a monoflop. These will allow for filtration to occur allowing only blinks lasting greater than a set time to pass and be translated to mechanical functioning / turning the motor on and off (Figure 1).
Figure 1: Circuit (one shot multivibrators)

Figure 2 depicts why only certain signals will be read. During a long blink, the set time D is exceeded allowing for a signal to be translated. It is important to understand that the purpose of this circuit is simple to take the switch and filter and modify it to turn the motor on or off. The exact amount of time this delay will last is set but the selection of a capacitor.

I then realized that there is only one signal given by the switch, meaning that only one signal will have to turn the system on or alternatively, off.

Figure 2: Signal Graph Filtration
A flip flop switch will be added to the circuit. This sequential logic operation basically will just turn the switch on of it’s off or vice versa.

![Flip Flop Switch](image3)

Apart from working on the circuit for the project I also updated the budget so we now have an outstanding of $632.94 left to spend. I also made some measurement and cut some neoprene for the wrist guard in order to hold the gooseneck arm in place. I also found a great mechanism from another compass to attach to our own. This adjustable nut shown in Figure 4 is able to hold pencils, pens, crayons and overhead markers so it has a great range of circumference, it is not pointed so it will not damage pencils and it is made of a durable shatter resistant plastic.

![Utensil Mechanism](image4)

3. **FUTURE WORK**

By next week I will have finished machining the compass and sewing the neoprene fabric to the wrist guard. Also as a group we will have a finalized design for the circuit. We are still looking for a new speedometer cable to fit through the longer 48 inch head gooseneck so we intend on finding that by next week. We will also be mounting the gooseneck to the helmet with plastic brackets from the Mansfield supply store.
4. PROJECT REVIEW
Our team is back on tract this week. Once this auxiliary circuit system has been fully figured out we can go on to build, test and modify so that the whole device functions like the way we want it to. We are extremely motivated to work hard and finish this project as soon as possible. We have to work hard to have all schematics and circuit logic configured within the next two weeks.

5. HOURS WORKED

In Lab: 6 + Outside Lab: 12 = Total: 18 hours