


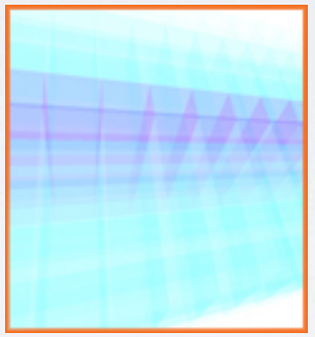
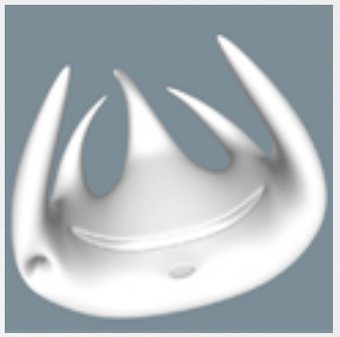
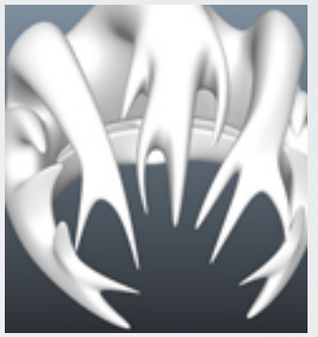

CROWDED HEAD

Considerations and Progress

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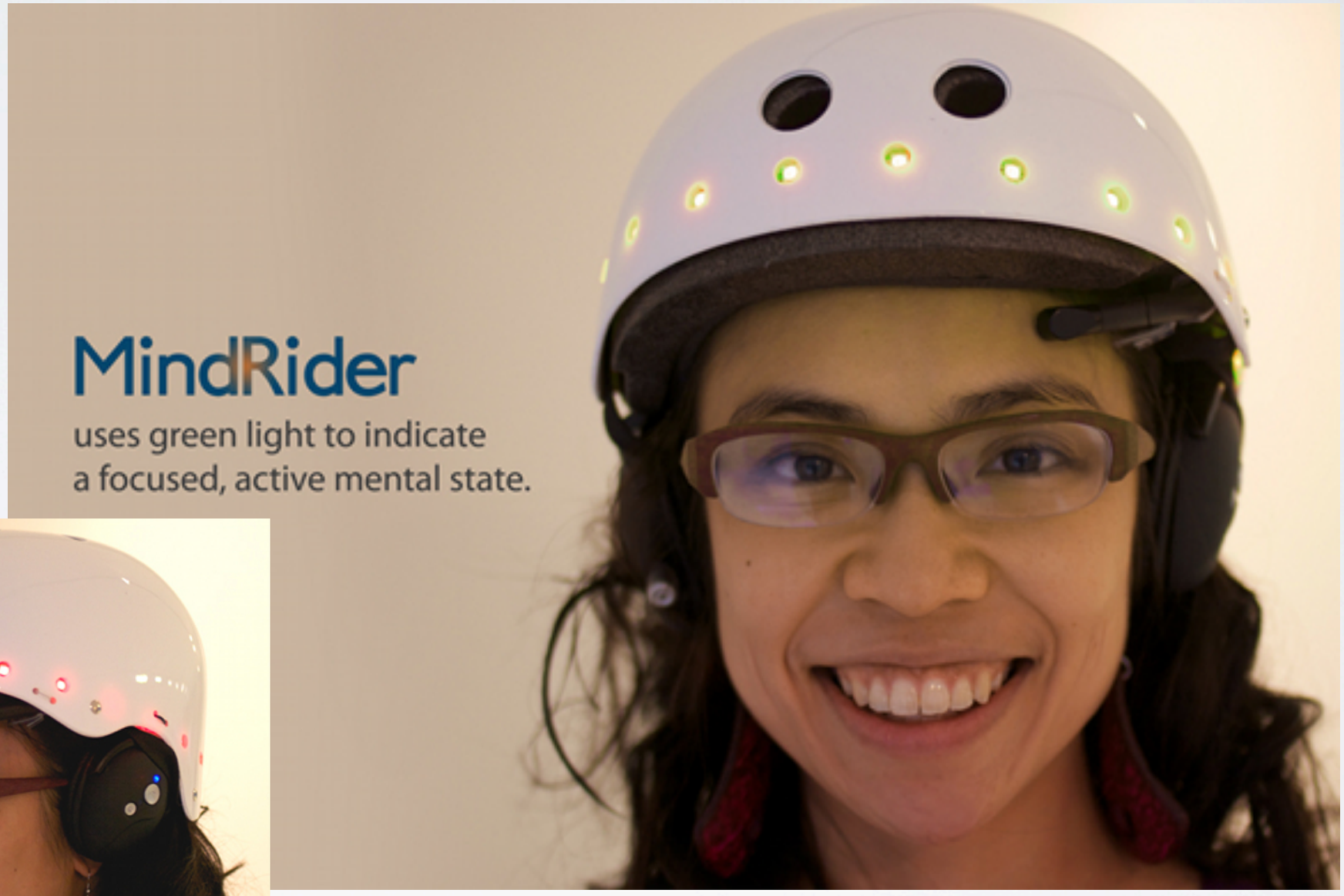
Spring 2012

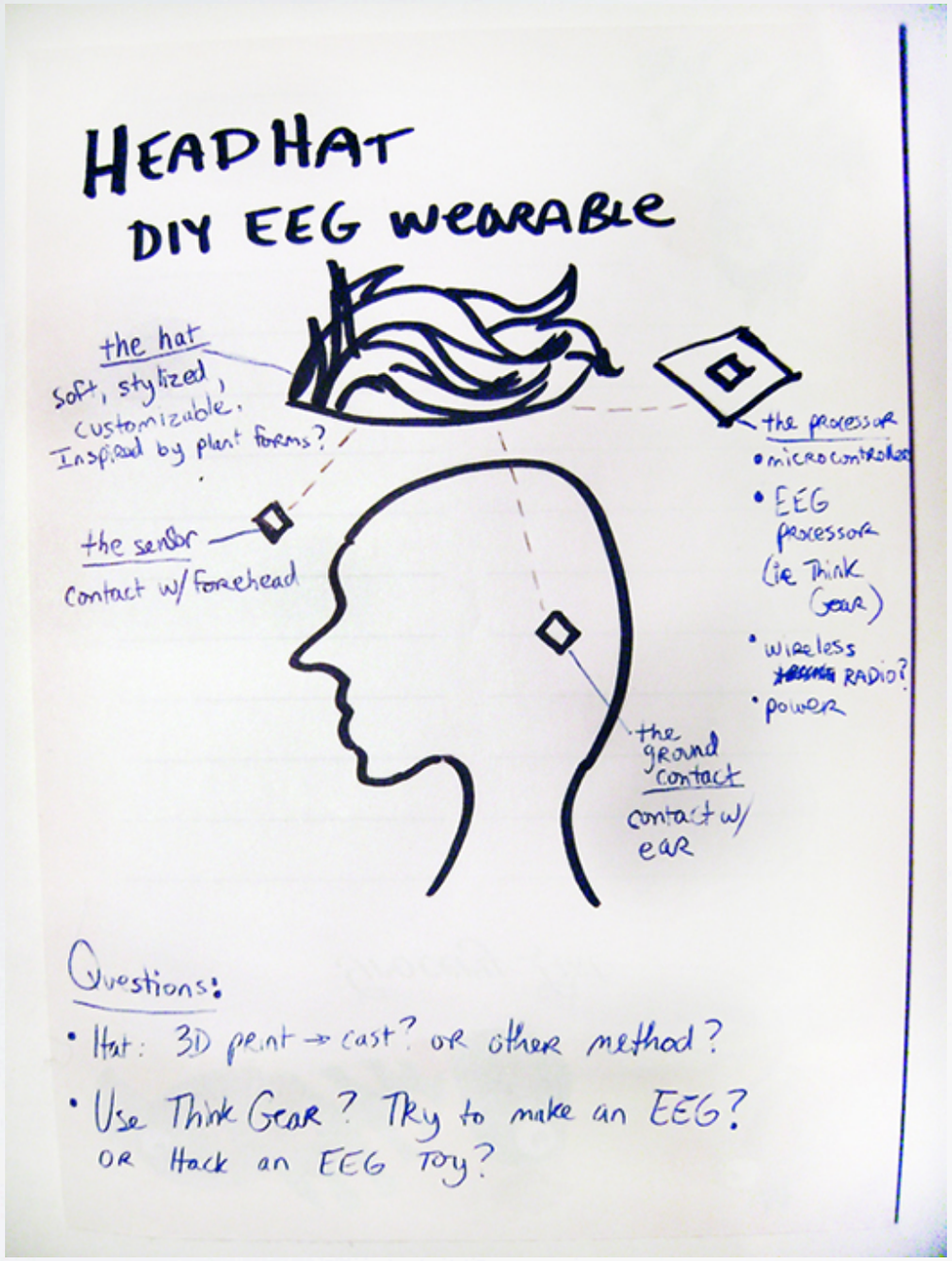


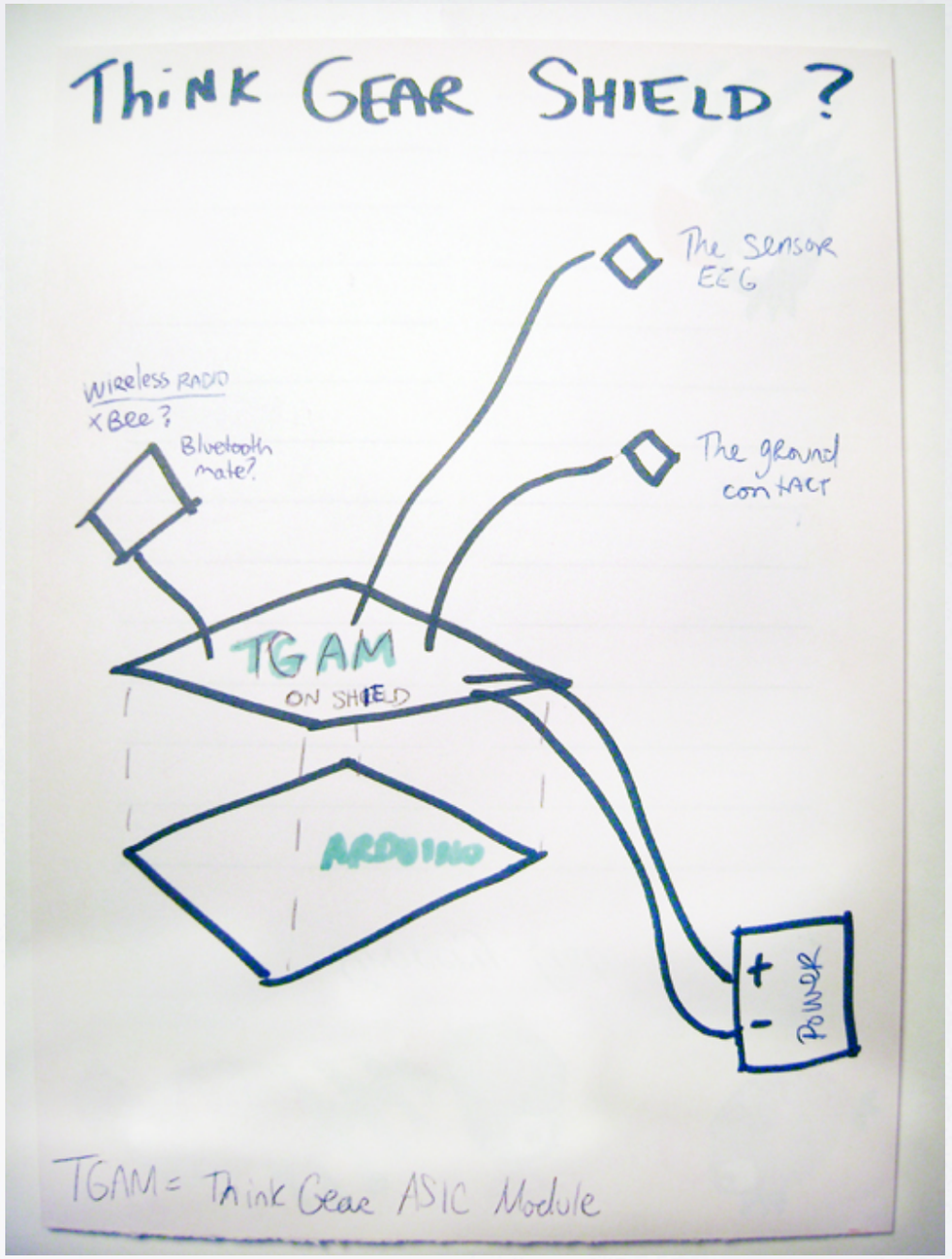
NEW APPLICATIONS IN BCI

Cheap ASICs. Gaming, toys, non-medical apps.
My app: cycling safety.

DIY GOALS

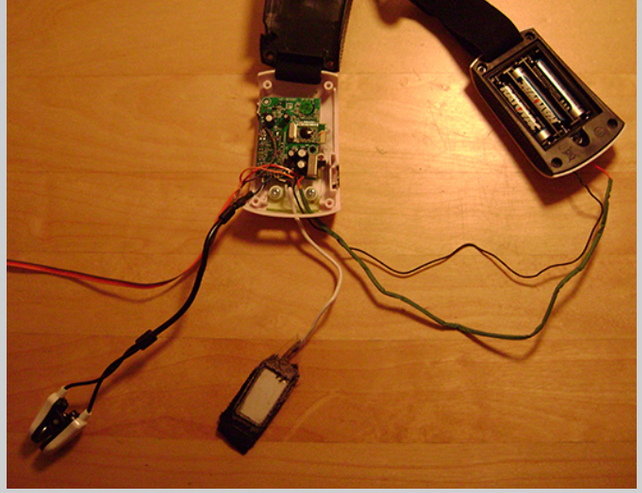
- A BCI **wearable**, using the NeuroSky's TGAM and a single-electrode EEG setup, that is more aesthetically expressive than existing wearables, but just as comfortable, and just as plug-and-play.
    - The wearable will be 3d printed and possibly cast as a mold.
- An EEG Arduino shield (for second half of semester)
- Related goal: visualization software to use with the BCI wearable

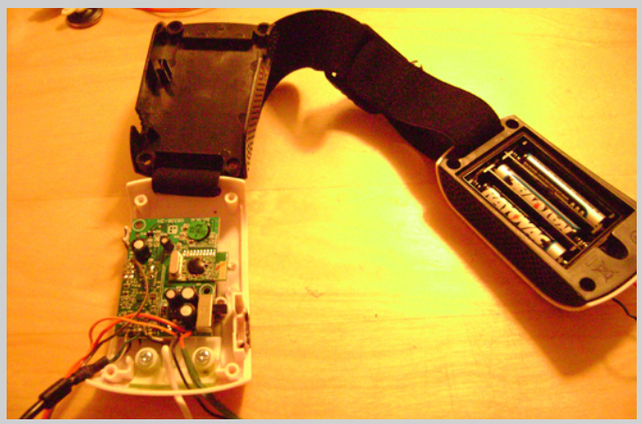


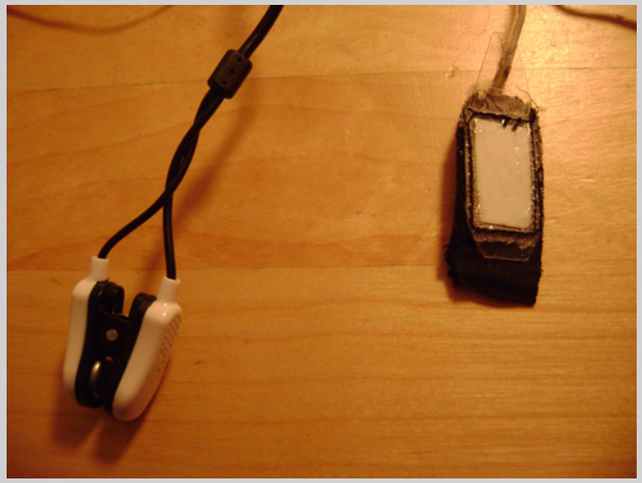


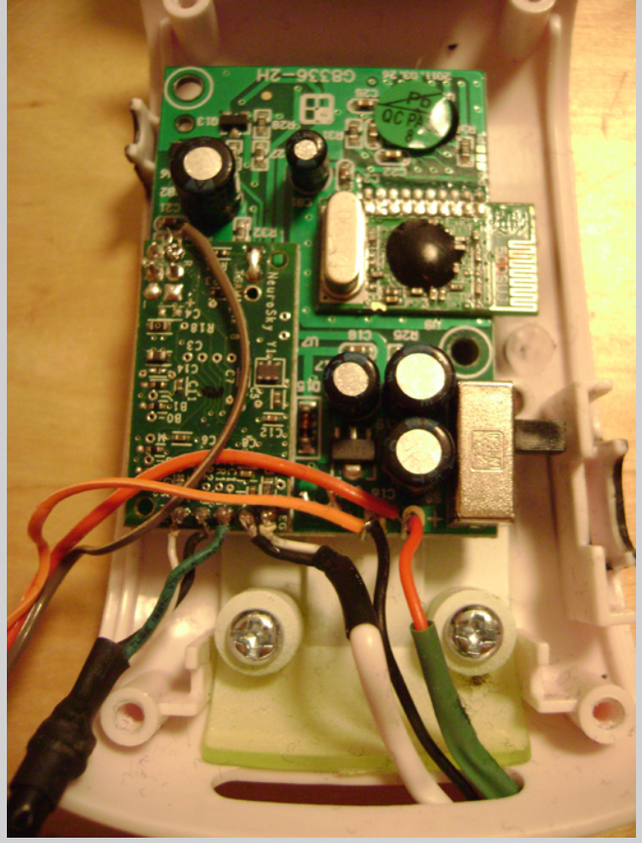
FIRST SKETCHES

for the wearable and the shield. Simple in concept, but complex in execution, at least for me.



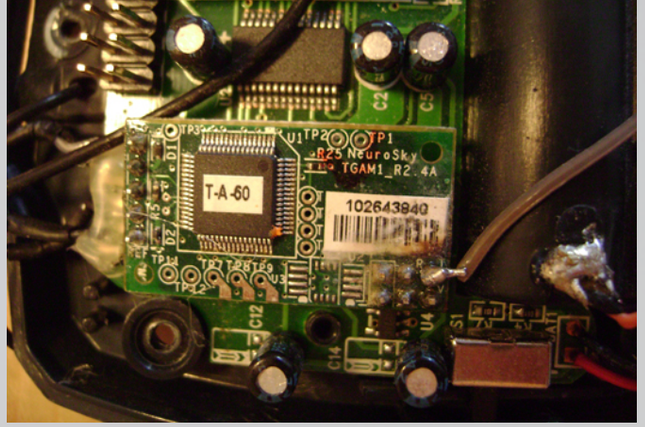


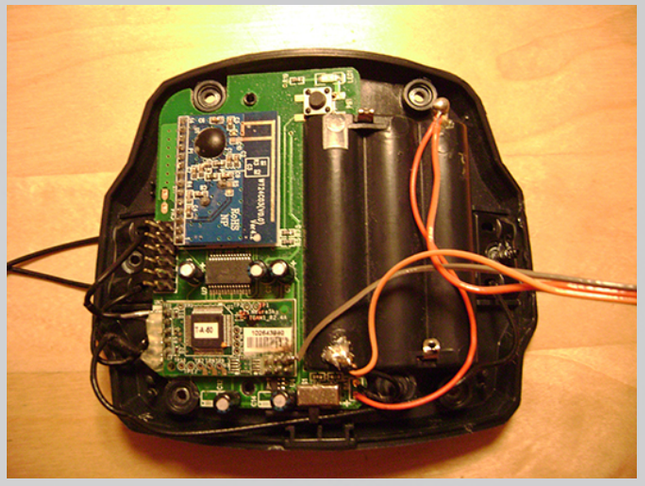


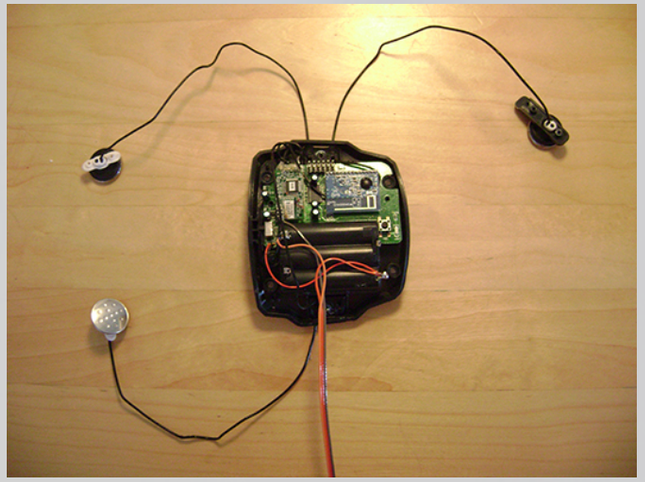


MindFlex

Star Wars Force Trainer





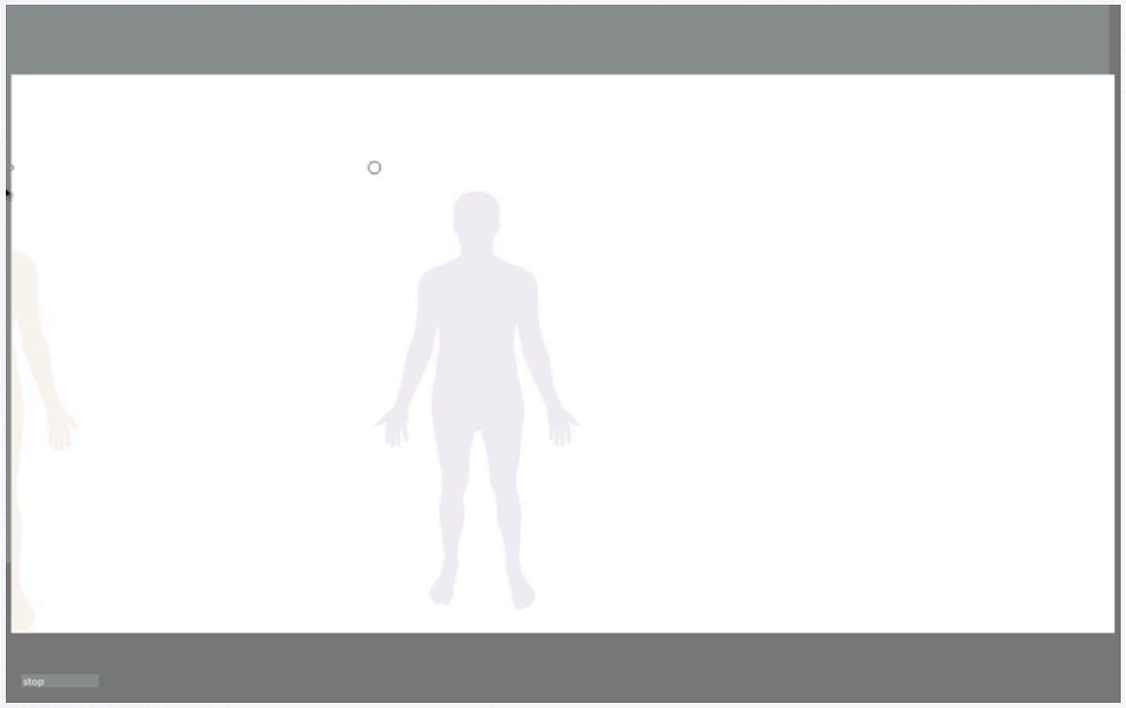


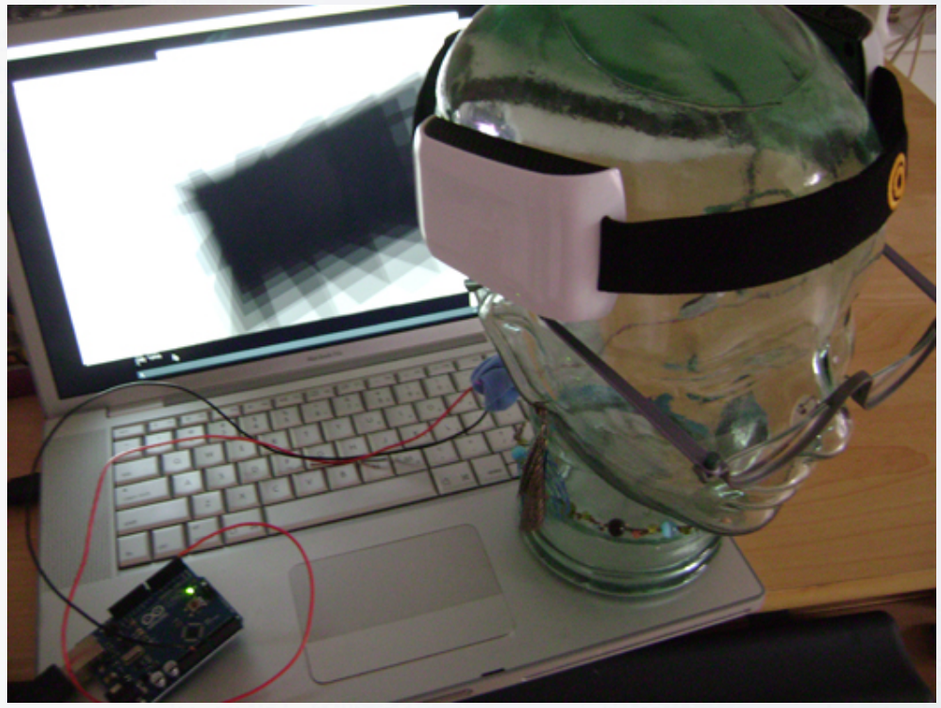
TOY DECONSTRUCTION

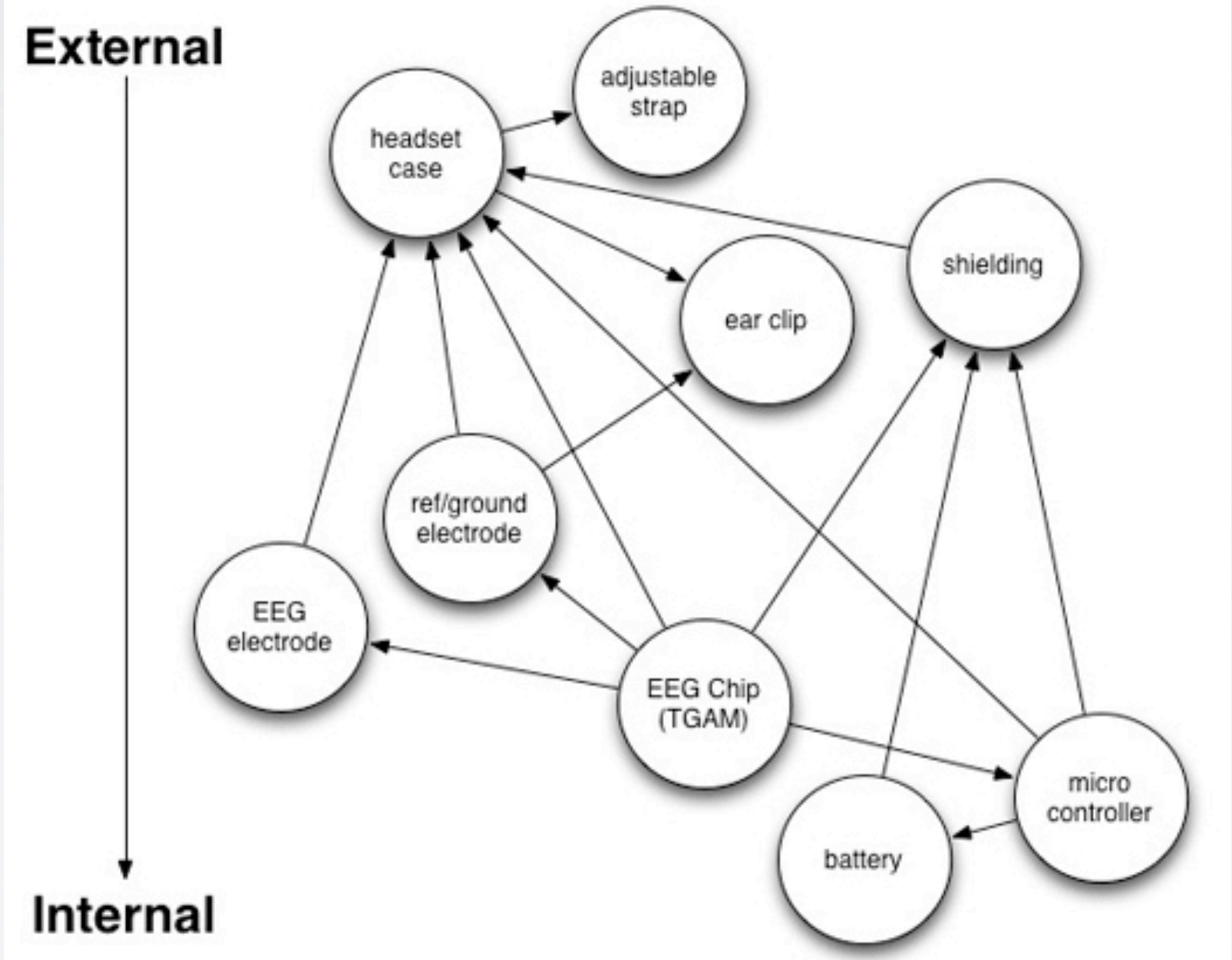
Learning about the guts of the leading TGAM-powered toys: Mindflex and Star Wars Force Trainer.

VISUALIZATION PROTOTYPES

- Embodiment of brain activity? Via an avatar?
- Inclusion of gesture/movement: active control of avatar via movement
- Active control against "crowding barriers" via brain activity





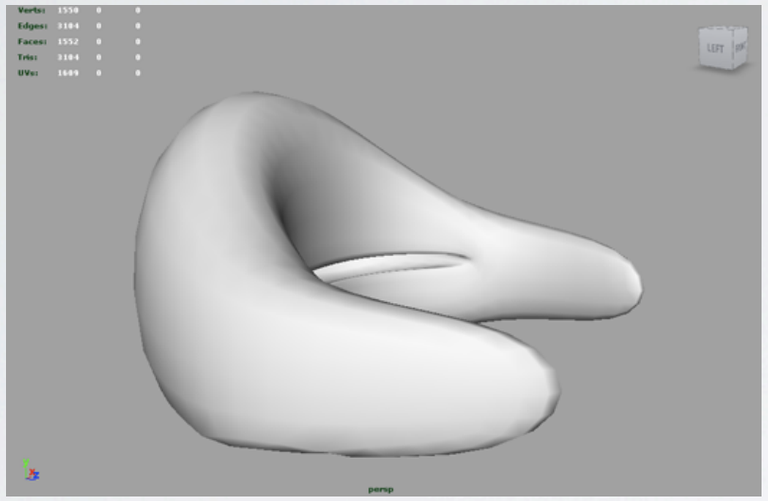


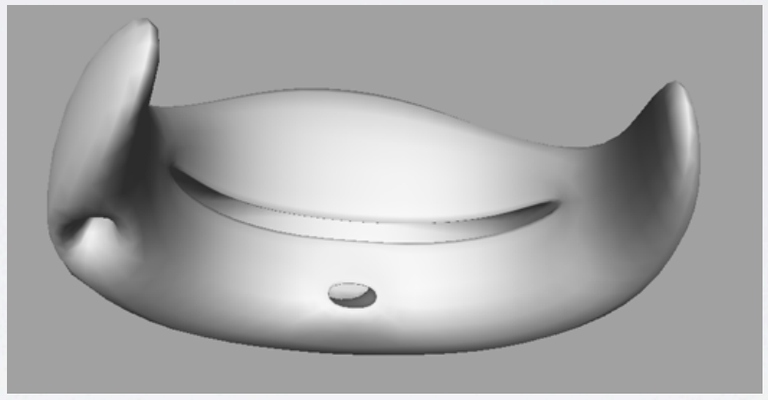
LIAISON DIAGRAM

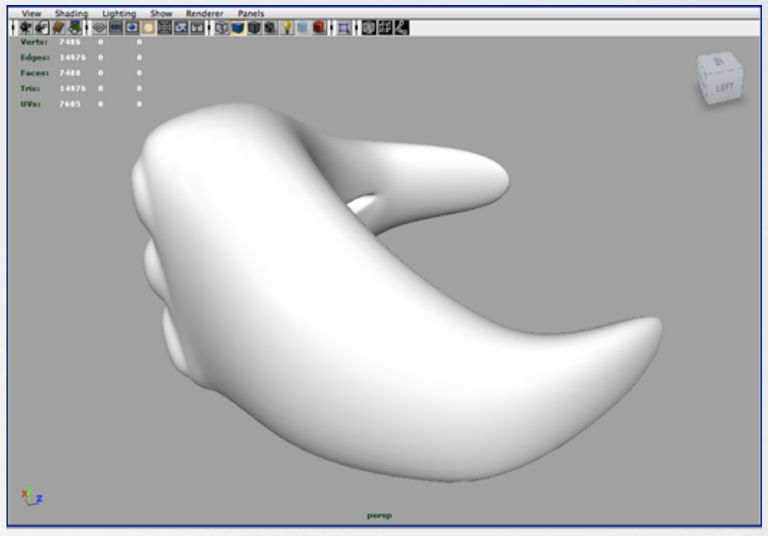
An interesting exercise. From the scale of modular to integral, my project is highly integral.

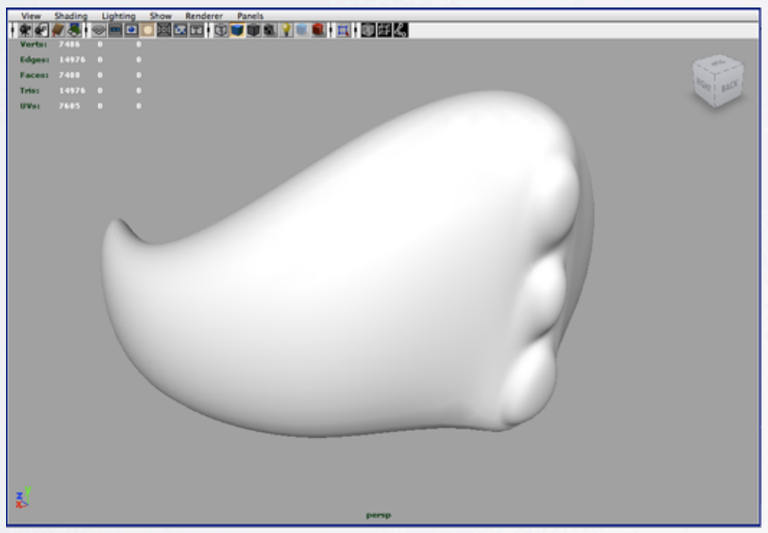
CAD MODELING GOALS

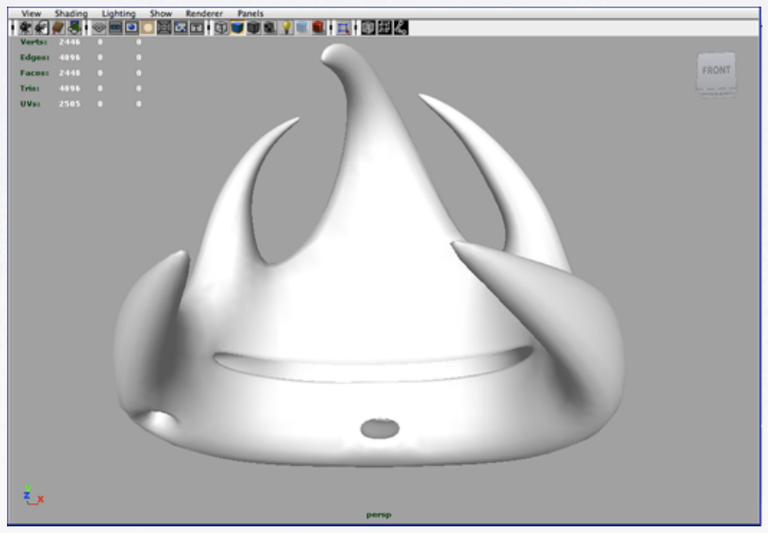
The aesthetics of the leftmost object, with the flexibility and containing abilities of the rightmost object.

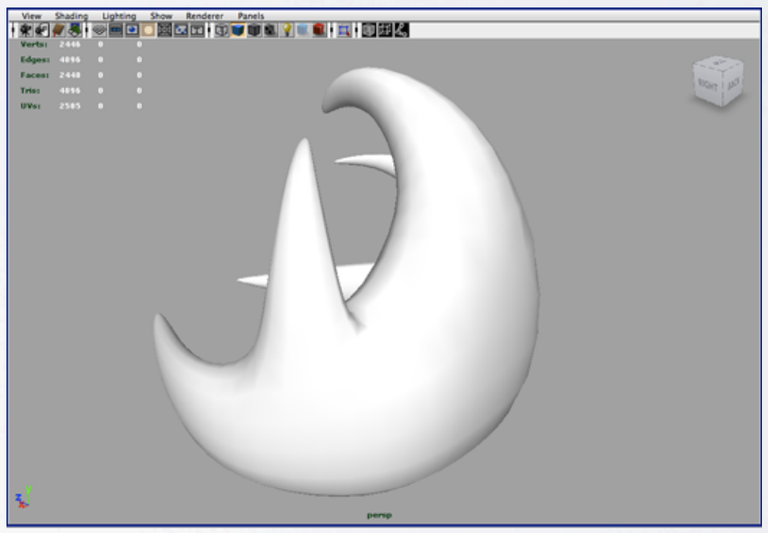






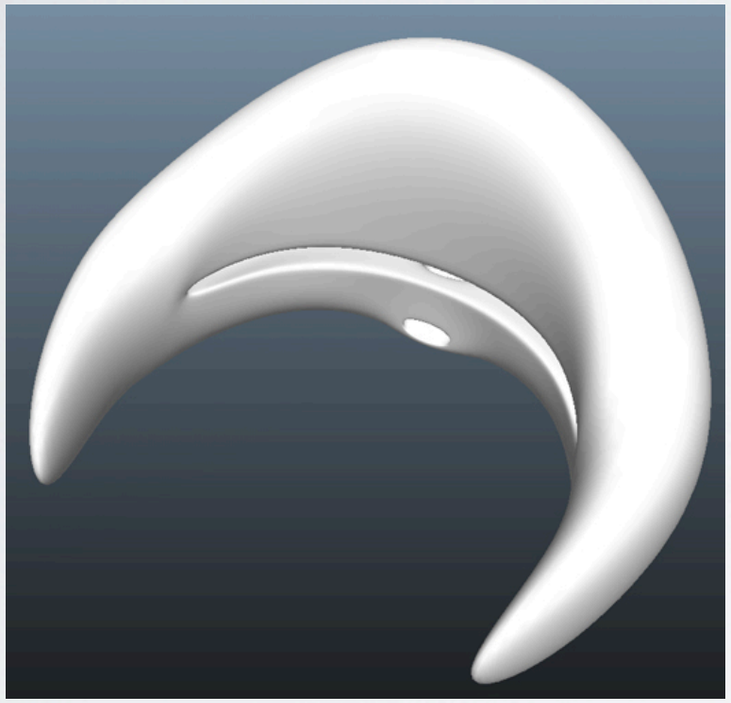


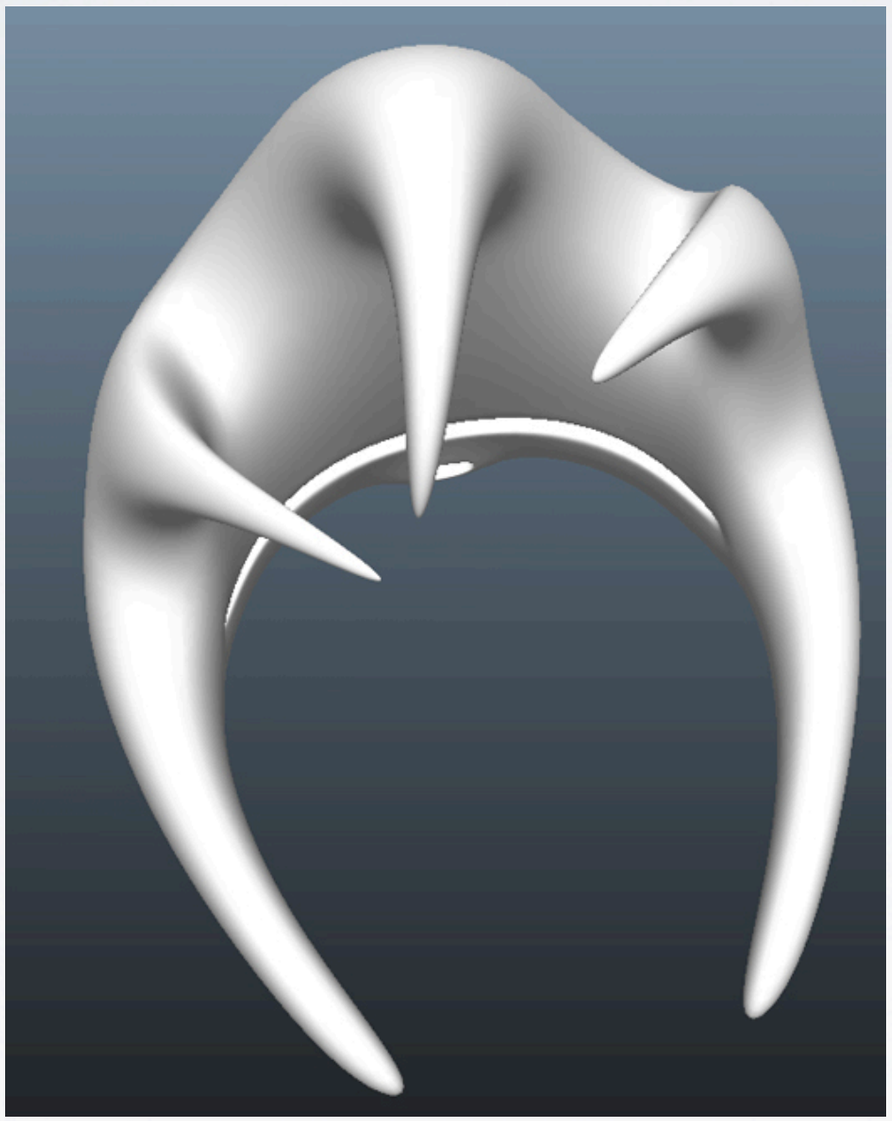


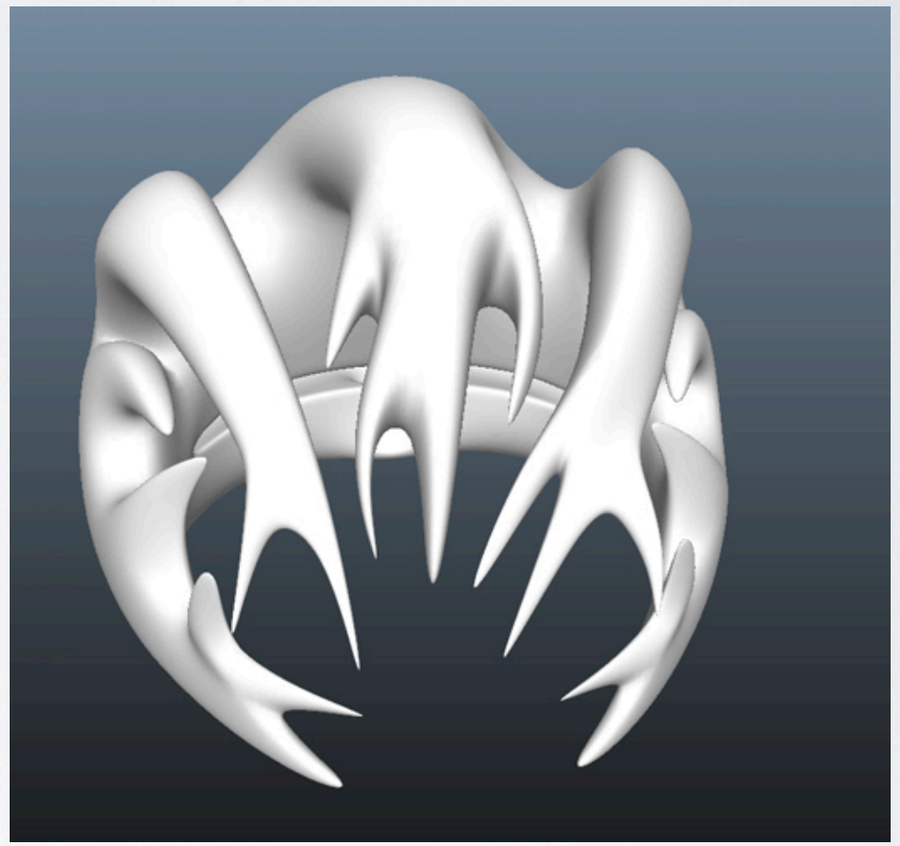


CAD MODELING: I

Modeling the basic, hollow container to hold the circuitry at the forehead.

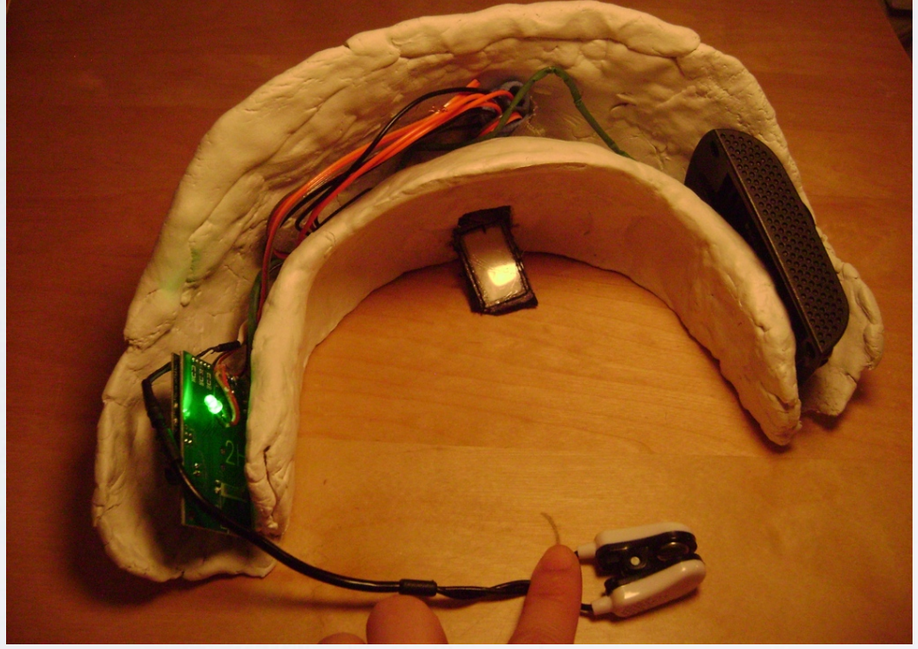


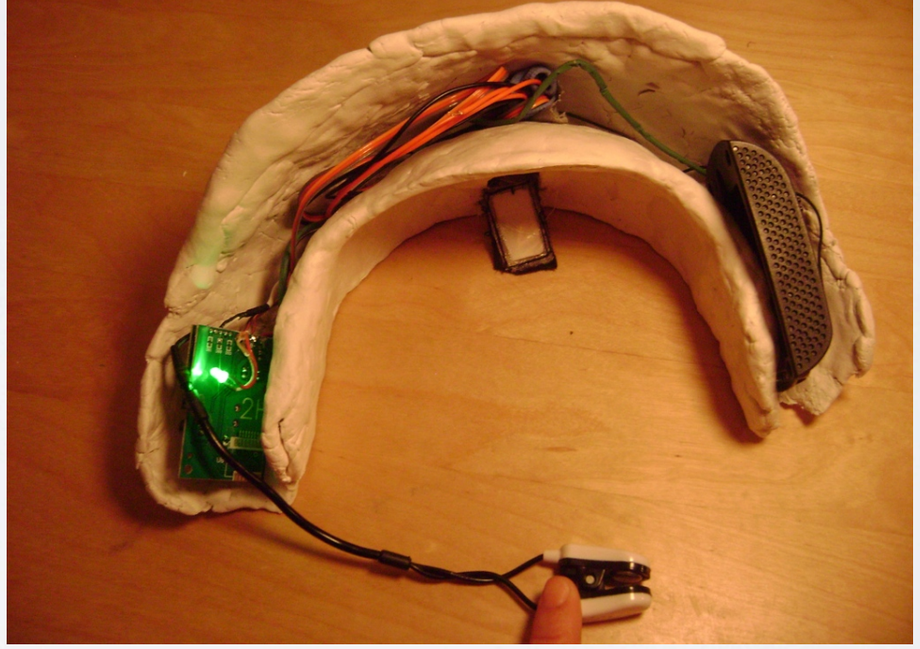


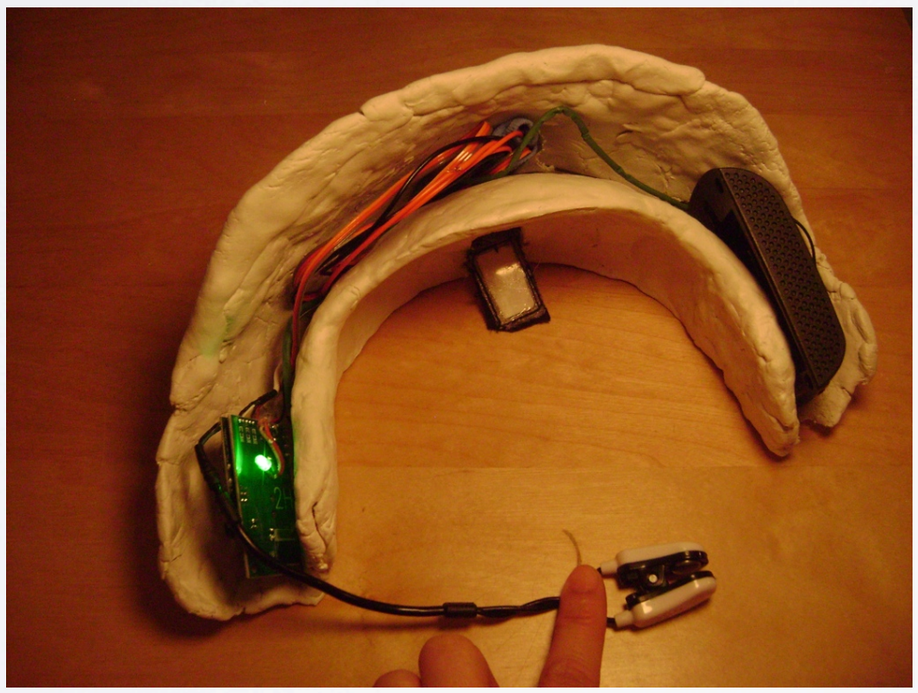


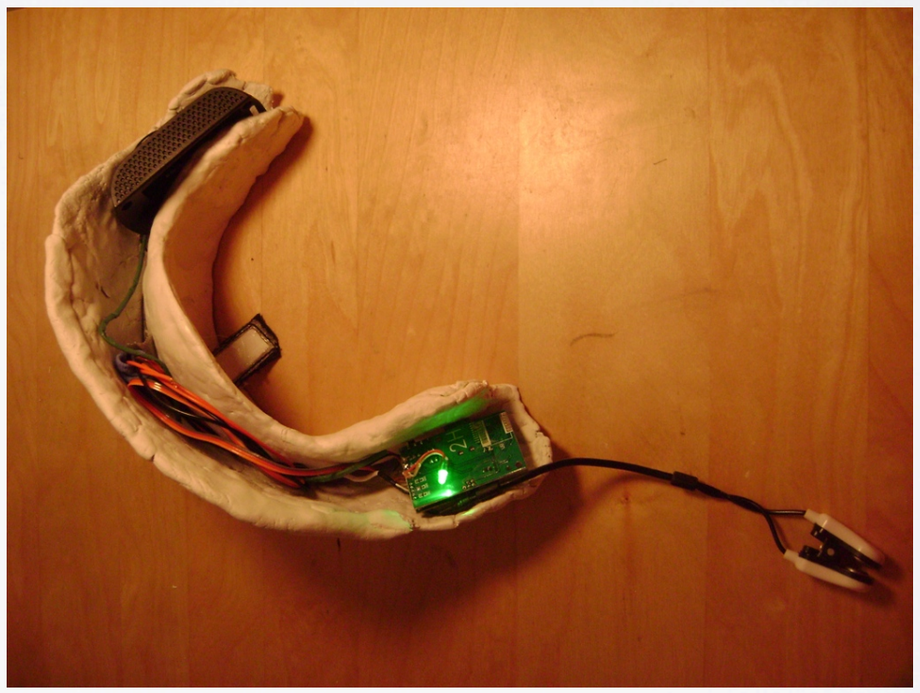
CAD MODELING: 2

Adding embellishments.









CLAY MODELING

An exercise in spatial considerations for the Crowded Head project. Maybe Mindflex's over-the-ear design is the way to go.

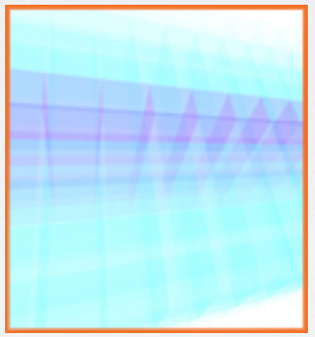
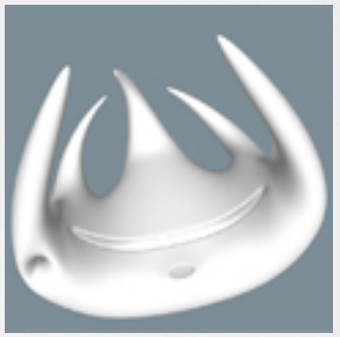
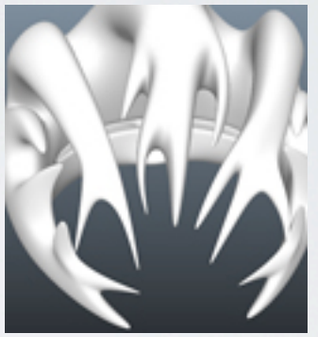
3D PRINT

This thing is thick, even at the 20% scale!

NEXT CHALLENGES

- Designing a 3D print that is
    - light
    - large and strong enough to hold the circuitry and power supply
    - comfortable
        - aesthetically striking
- Printing it
- Casting it?
- Designing a PCB for the EEG shield
- Powering the system from one source (currently there are separate power sources for the TGAM and the Arduino)



CROWDED HEAD

Thanks!

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