EE/Cpre 492 - sdmay21-1
Interactive Secure Headset
Week 2 Spring Semester Report

Feb 8th-Feb 22th
Client: Cornerstone Strategies, LLC
Faculty Advisor: Dr. Rover

Team Members:

Robert Barton - *Meeting Facilitator*
Morgan Ambourn - *Meeting Scribe*
Nathan Andersen - *Report Manager*
Ehren Fox - *Chief Software Engineer*
Asa Pauls - *Chief Electrical Engineer*
Zach Johnson - *Test Engineer*

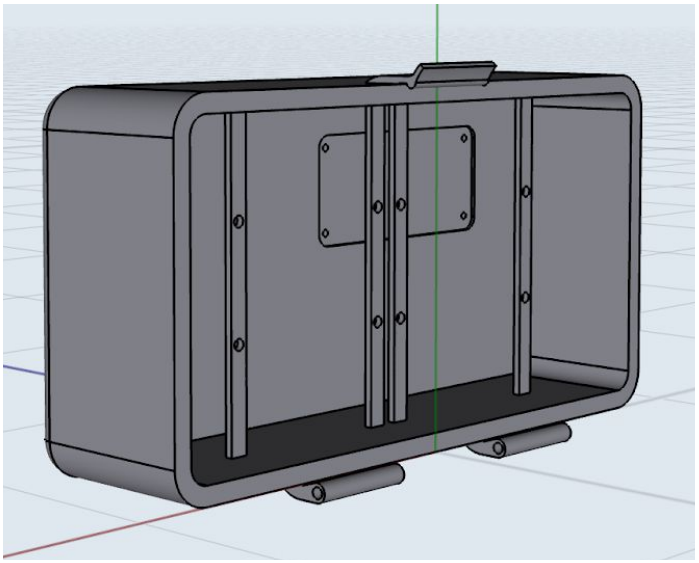
Summary of Past 2 Weeks:

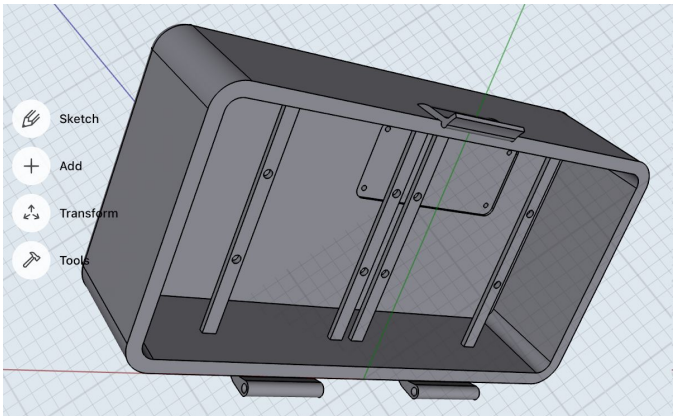
Over the past two weeks our team continued our work on the device. Landing pages have been created for the user to navigate and enter in their network information to connect to their wifi. The screens that were ordered have been hooked up to the raspberry pi and can display the desktop. Research has been done further looking into limitations on vr/wearable displays. Initial models of the front of the device have been designed. Work on controls have started. The client suggested looking at a touchpad, and the team has also suggested a 5way switch and a handheld mouse. These parts will be ordered at the start of the upcoming week.

Past 2 Week Accomplishments:

- Rob
    - Wrote Two HTML pages for users to input their network information through
        - Customized them to client specifications
    - Researched NodeJS and how it could be used to save user network information
- Asa
    - Setup screens to display video and mirror the HDMI input for a desktop screen
    - Got a support ticket for a lost package from the vendor I ordered hardware from and a timeline until the package can be claimed as lost and refunded

    - Found a potentially better driver library to drive a screen for our purposes and ordered a screen for testing purposes
- Morgan
    - Read research papers about time limitations for wearing a vr headset and if there is any long or short term risk/strain on someone's eyes
        - Recommended length of time for use is about 30 min, short term effects may be similar to using a desktop, short term effects usually wear off after about 5-10 min of a break from the headsets
    - Estimate of product price (with bulk factored in)
        - Around $56 for product (without casing, packaging, tech/customer support included)
    - Looked more into controller options
        - Looked at wireless handheld with trackball
        - Touchpad option
- Ehren
    - Researched headset casings for our components
    - Designed front component to house LCD screens and Raspberry Pi Zero W to specifications
    - Made initial design of front headset casing with CAD software





- Nathan
    - Controls
        - Found additional parts
        - Looked into assembly of components
            - Will need an ADC because pi does not have any analog inputs
                - Found libraries to support a ADC in python
            - Found libraries for linux to map GPIO inputs to keyboard/mouse strokes
                - Found examples of other projects
- Zach
    - Got server access from ETG
    - Scheduled a meeting with Rachel and one of her industry contacts to discuss mock data to test our application with
    - Began deploying Tao to the new server from ETG

Pending Issues:

- Decide on control
    - Order parts, or order device Ehren found, and modify it?
- Order control components
    - Parts out of stock, can we find alternatives
- Lost shipment, delays some timelines
- Rachel wants casing to be more round, looks like glasses
    - Less blocky
- Tamper evident? How can we detect if it was forcefully opened?
- Order all 3 types of controls, test to see which feels most comfortable

Individual Contributions:

Team Member	Contributions	Hours Worked	Total Hours (Sem. 2)
Robert Barton	Wrote custom HTML pages. Researched NodeJS.	12	18
Morgan Ambourn	Health risks and time constraints of wearing headset, looked more into controller options	6	12
Nathan Andersen	Looked further into controls, came up with examples and libraries to program the use of controls through GPIO pins.	6	12
Ehren Fox	Headset casing research and design. CAD design of headset casing.	8	14
Asa Pauls	Got an LCD to mirror HDMI output. Found better screen drivers and ordered parts to test.	6	12
Zach Johnson	Acquired server access and began Tao server work	5	8

Plan for Upcoming 2 Weeks:

- Rob
    - Finish researching NodeJS
    - Write necessary code to update user network information
        - Integrate JS with HTML pages
    - Test everything
- Zach
    - Meet w/ Rachel and testing industry contact about mock data for testing
    - Determine how to display mock data acquired from industry contact
    - Complete deployment of Tao application on the server and try to make a connection from the Rpi on a remote network
- Morgan
    -
- Nathan
    - Order the controls to try (5 way switch, trackpad, handheld controller)
    - Test the different placement of the controls
        - Rachel likes the idea of having only 1 piece to the device. She's open to trying some sort of handheld device, but would still like to try having the controls on the headset itself.

        - Plan is to test operating controls on the side of the headset, and using a handheld device to determine what feels normal/easier to use.
            - Also check if you can hold your arm up to the side of the headset for long periods of time, such as the time needed to take a multiple choice exam.
- Asa
    - Go beyond mirroring HDMI to just displaying desktop on LCD and try to turn off HDMI output
    - Test the new driver library and screen
- Ehren
    - Would like to play around with current front headset casing design to ensure it suits our project's needs. Plan on printing the initial mockup of the headset casing and testing to ensure good fit with hardware components.