Journal #5

Louis Harshman – WaveSpeak

Goals and reflection:

1. Compile the tablet software.
   1. After installing several different Debian and Ubuntu versions and switching to the newer DietPI OS on my raspberry PI allowed for a reliable build chain that I can use on a regular basis.
2. Create a software development plan for the project.
   1. Made a Trello and I am adding features daily.
3. Decide on how to display button elements in html.
   1. I am doing a 1-dimensional array to matrix data structure to display the elements.
4. Develop the button objects and layout.
   1. Represented in a JavaScript class (see OOP patterns <https://en.wikipedia.org/wiki/Object-oriented_programming>), buttons are built from a manifest file called JSON (JavaScript Object Notation). When the app is loaded, it will read this JSON and build an array to read from on app load.
5. Develop Button to backend calls.
   1. I am just using a JavaScript feature called “EventListener” that adds behavior to an element that is executed when an event occurs (e.g. clicked, hovered, loaded).
6. Try to add icons to buttons.
   1. Used the JSON manifest to store *paths* to images. This is important as if I stored every image for every chip, memory usage would be insanely high for this app. I currently have it down to ~80 Megabytes at idle. For reference, a default chrome browser with google.com loaded uses ~117 megabytes so I’m doing pretty good regarding space complexity.
7. Make Text to speech sound more natural.
   1. Working on implementing coqui-tts (<https://github.com/coqui-ai/TTS>). The biggest issue I’m having is that it is a python library, and my application is written in rust. This is solved by something called “bindings” which allow me to easily execute python from my rust code.
8. Add action buttons.
   1. Action buttons are implemented and will always take up the bottom row.
9. Add behavior to the visor.
   1. The visor can now hold buttons and you can click every button to speak that word in the visor.

Reflection on Timeline:

I have struggled quite a lot on the manufacturing and design of the tablet because It’s not my strong suit. I am far more familiar with software development and patterns.

This has put me behind quite a lot on the timeline and I had to cut my development time by three quarters.

Accomplishments:

* The Entire software foundation/architecture is set up and ready for features to be added.
* The case is fully designed and ready for the final assembly.
* A white rectangular object with a logo on it

  Description automatically generated
* A white rectangular object with holes in it

  Description automatically generated

My Research and What I learned:

I have learned the following topic general and specific topics.

* Manufacturing tolerance
  + I learned about the unforgiving tolerances I must meet to make this project’s form factor possible. Designing is the easy part, but manufacturing is the hard part and I have had to redesign to ensure that this tablet is actually possible to make.