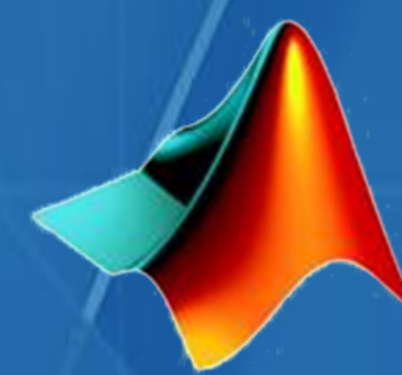


## PURPOSE

The goal of project Mind Map is to observe a person's brain activity, and then to create a 3D printed object that represents that activity. The user will be able to see how differences in thoughts, emotions or other activities can physically change the model, indicating brain activity changes. This project will create a tangible representation of brain activity, literally enabling the user to "hold that thought".

# EMOTIV

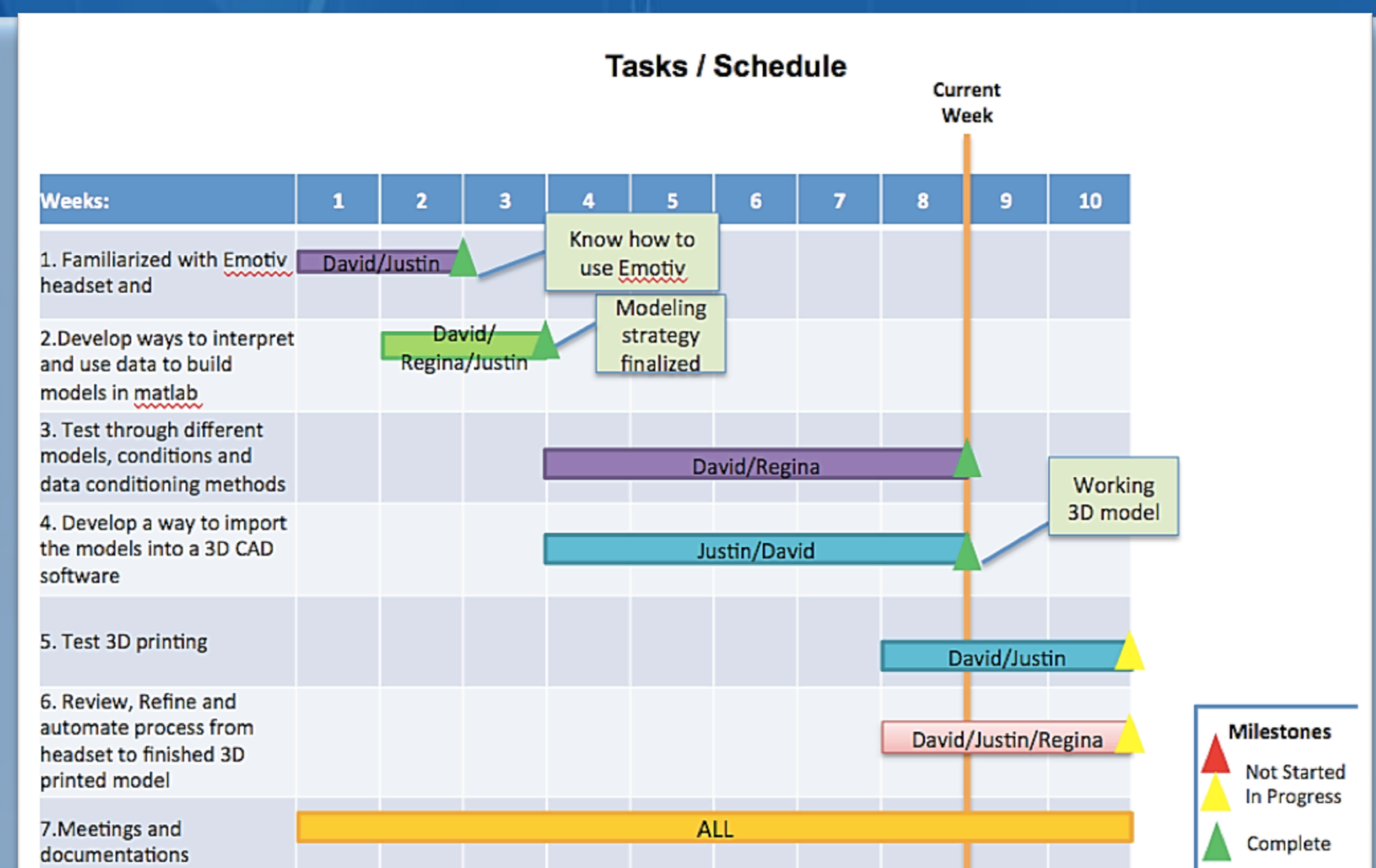


# MATLAB

## METHODS

Modeling Approach:

1. Acquire data with Emotiv headset.
2. Filter and organize data using Matlab.
3. Create 3D model in Matlab, export as an stl file.
4. Use a 3D printer to create the physical model.



## RESULTS

Modeling Results so far:

- Figure 1's model portrays the relative prevalence of each range of brainwave frequencies. More/less prevalence over time can correlate with the user's behavioral or mental changes.
- Figure 2's graphs are showing the distribution of the intensity of a certain frequency when viewed from above.

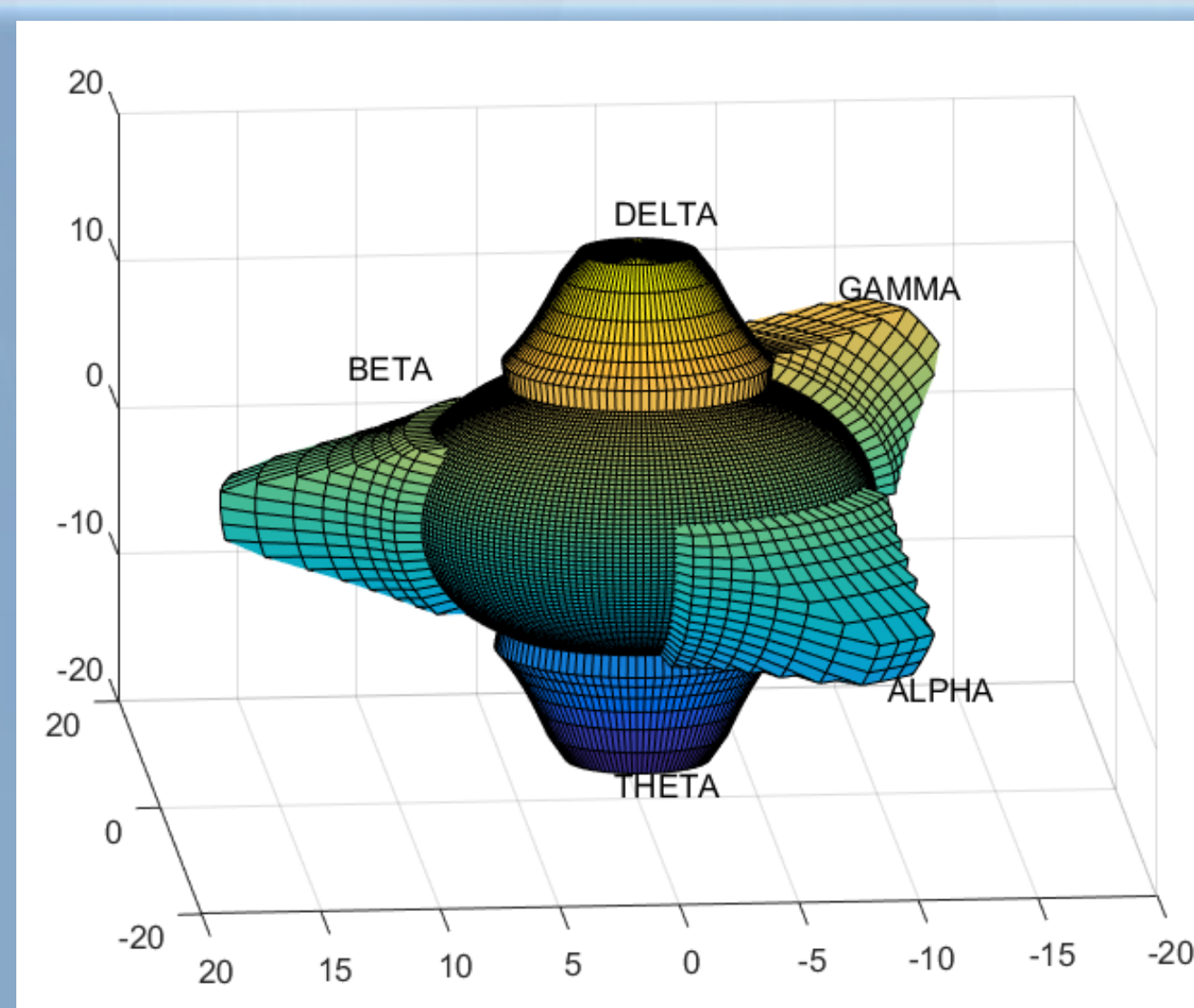


Figure 1: Brainwave Frequency Prevalence

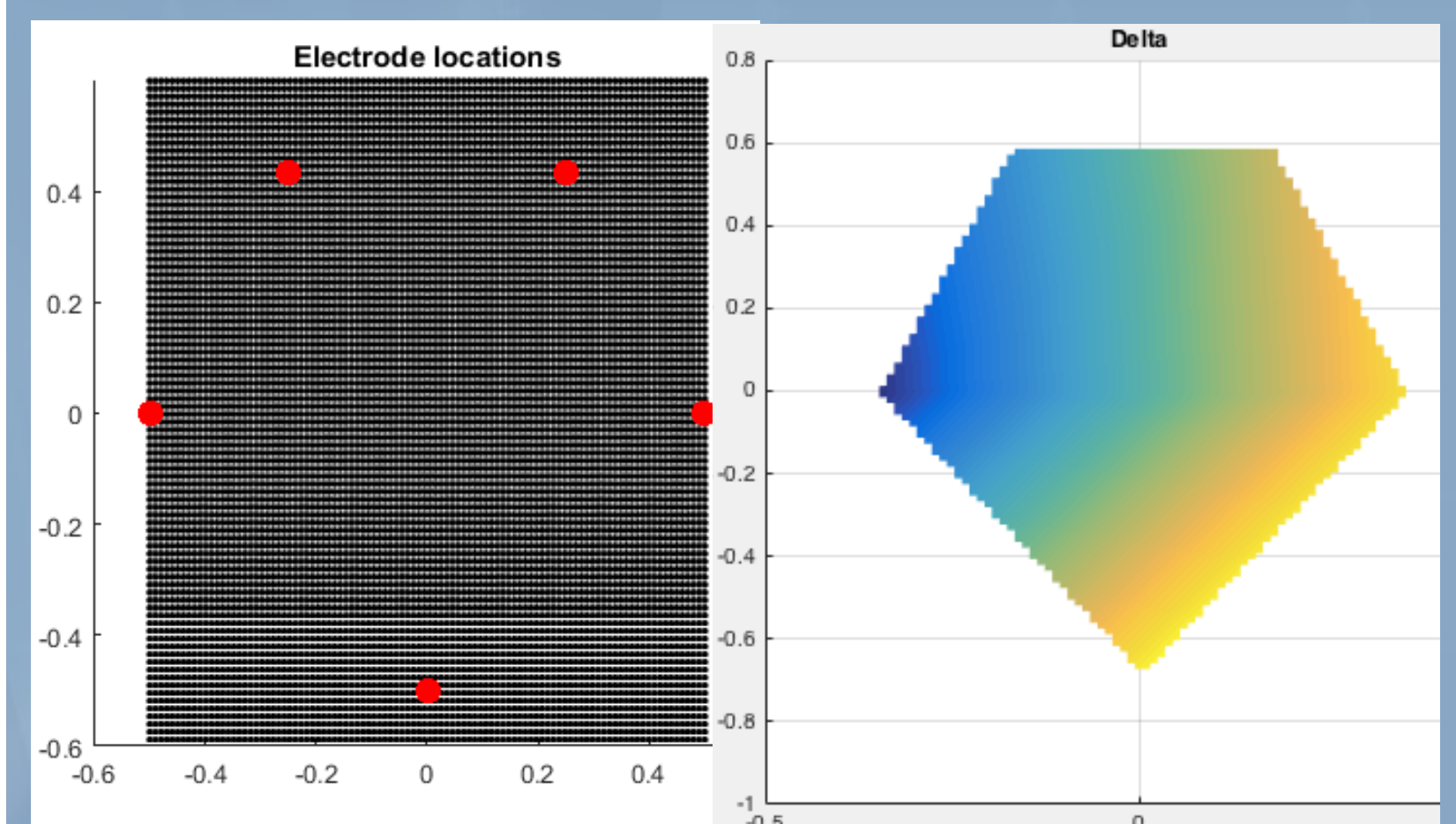


Figure 2: Delta frequency spatial distribution Graph

## CONCLUSIONS

This project allows users to visualize their brain patterns in a qualitative way by seeing how the model changes over time. The project is a success as a proof of concept of pairing EEG monitoring and 3D modeling/printing. In future work on Project Mind Map, the SDK of the Emotiv Testbench could be implemented with Matlab or another program to filter and graph the data. This would allow for live data modeling, enabling the user to easily understand how their actions affect the model. Additionally, other models could be created to focus on different brainwave characteristics, emphasizing different properties depending on what the user wants to investigate. Studies/trials could also be conducted on people themselves, allowing any benefits of a physical model to be well documented.