Project Proposal

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Description

This project aims to display real-time EEG processed brain-data which will be gathered by using a mobile Brainwear® device on the spot. The equipment I will be using for this coursework is called *Emotiv EPOC+*. Fortunately, the company has created an API suite, entitled *Cortex, "to integrate Emotiv headset's data streams with third-party software enabling to record data, create BCI applications or build custom games and apps."* With the support of the documentation that is provided by *Emotiv* (https://emotiv.gitbook.io/cortex-api/), I can use their *Data Streams* API to extract various performance metrics that are noted in **Sources** paragraph.

If the project will be carried out successfully before the deadline, I am considering implementation of *Amazon Transcribe*. As a result, it should assist with speech-to-text recognition in near real-time which could be connected to *Twitter* API and have an ability to post a tweet without the need of doing it manually.

Sources

The numerical data will be presented in six performance metrics such as Stress, Engagement, Focus, Interest, Excitement and Relaxation. For the stats to fetch, the data will be processed in the *Cortex* Services using Raw EEG directly from the brain. To have the data displayed in real-time on the website, the device must be on the head during the demonstration.

The sentiment analysis will be carried out using Twitter's API to gather the needed text and AWS Comprehend analytic services to perform sentimental analysis on the textual data.

Front-End visualisation

The first picture presents possible outcomes of the design. I began designing the first version but in the middle of the process, I had another idea how to execute the project more efficiently.
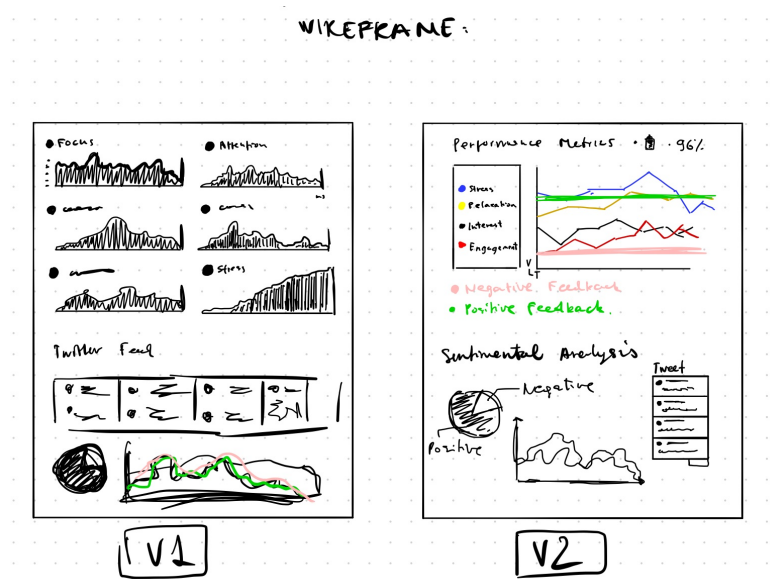
The second picture represents the final version of the front-end. The website was designed to remove any data from the metrics to have more focus on the statistics that matter in that particular moment. This way, the website has to be as simplified as possible without sacrificing the crucial data infographics like sentiment analysis or the performance metrics. As you can see, the metrics can be hidden by using one of the provided options in the interface - *Show/Hide Metrics*, *Disable Predictions* and *Disable Sentiment Analysis*. Once the method has been executed by clicking the option, the word *Disable* will turn to *Enable*.
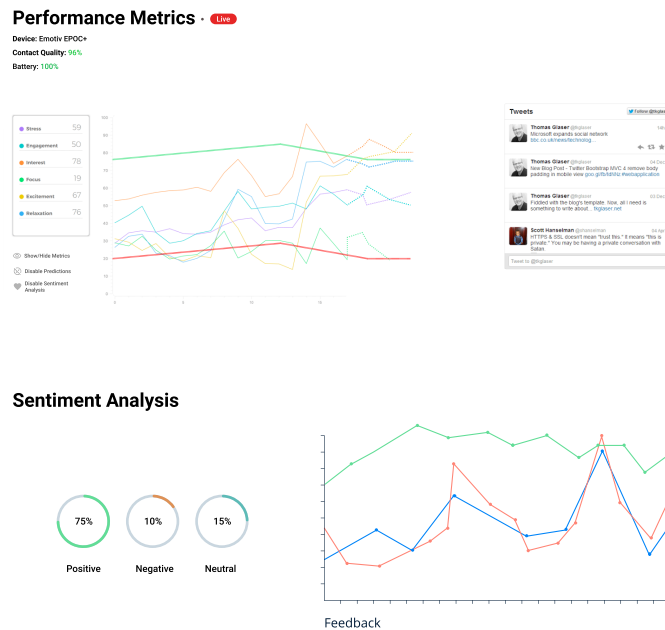
Twitter's feed is going to fetch daily news from major news outlets. *AWS Comprehend* will determine the status of accumulated news in the feed, whether it is positive, negative or neutral. By having the sentiment analysis working, the website will display the predictions of every metric in the case of what would happen if the subject (who wears the headset) would start reading daily news feed.

Static Website

URL: http://cst3130-cw1-proposal.s3-website-us-east-1.amazonaws.com/

Screenshot: