Milestone 2

Principles of UI Software

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Work Description

In our proposal, we put forward the idea of a Sentiment Tracking Journal Entry Application. Our application provides the user a comprehensive way to document their thoughts in both typed and written form while providing a way to analyze the sentiment behind the journal thoughts added. The project at hand is more than just an application. It does place a significant emphasis on developing user interface (UI) technology. We pushed forward interactive features for users to customize the visualization of sentiment. They can simply circle an area of text to create a draggable sentiment analysis box.

We've implemented gestures that effectively reduce the time taken by the user to delete and erase items from the journal page while making it feel organic and authentic, like an actual journal page or a diary page. Rather than placing heavy emphasis on how sentiment analysis boosts the application, we've placed more focus on letting the user interact with their text, drawn words and the sentiment box in a way that makes their journaling experience combine the best of both worlds, the ease of typing with the authenticity of gestures.

Features Implemented

Main Menu:

The Main Menu is a simple screen that lays out a card view of the journal notes created by the user. Each journal note is depicted with a card with the option to edit the existing note or delete that particular note(Image 1). We also have an "Add" button at the top right of the screen to add a new note. Each card displays the title and the time of the creation of the note.
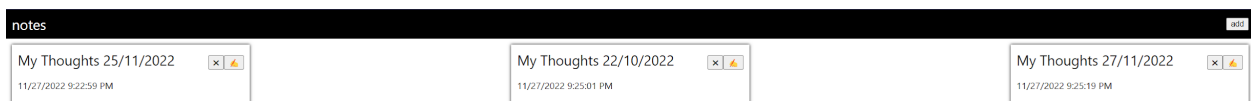
(Image 1)

Note Interface:

The Note Interface has a Diary Page like look with lines into which you can enter your thoughts. The UI has two parts, the Draw Board to write out or draw out on your journal, and a section to type into(Image 2).
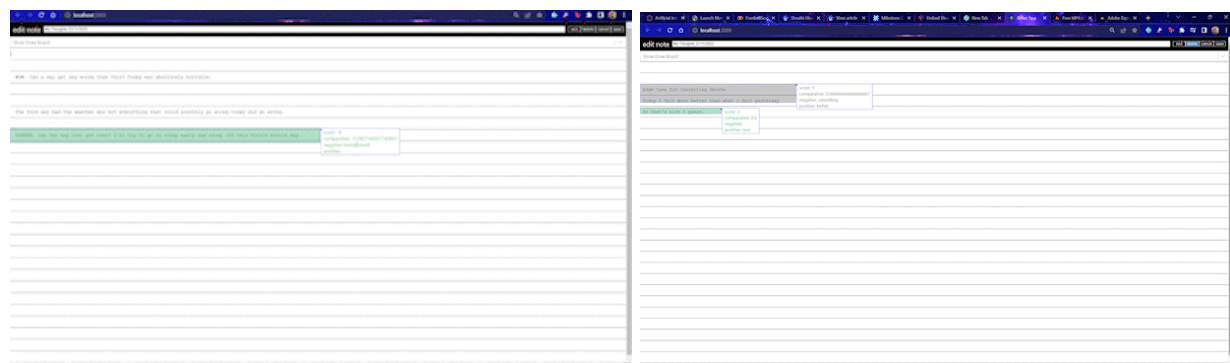
(Image 2)

A dropdown button(see image above) provides the user with the choice to hide or show the Draw Board, with the default set to Hide. We provide an interactive way to analyze and display the sentiment analysis of the journal entry. A "Rect" button lets us draw a rectangle(Image 3).


(Image 3)   (Image 4)

We can only draw a rectangle on regions with existing text. This means that we can not select an empty space. If we intend to draw on an existing rectangle area, it simply will not draw. Once we select a valid region, the generated visualization box shows us the sentiment of the text selected displayed on the journal entry to let us analyze the thoughts spelled out for the day. Every sentiment analysis visualization can be dragged and placed around the journal page, with different colors for different visualization boxes. The sentiment box can be deleted with a simple double-click.

(Image 5)   (Image 6)

By drawing a gesture from the top left of the screen to the bottom right of the screen, we can erase all content on the note and be able to start anew (Image 5). However, if users decide that they do not want to erase the whole page, they can simply move the cursor out of the bottom right corner. This means that the users can only erase the page when the gesture is a line crossing from the top left to the bottom right (Image 6). We also provide a way to draw a cross at the end of a line to erase the entire line as well (Image 7). This only works if we have two strikes and the gesture "cross" is drawn at the end of each line. This is a novel idea because there is no delete one-line-at-a-time feature for any current note-taking application. Selecting the entire line and pressing delete on a mobile tablet can be challenging. This simple gesture solves this problem.
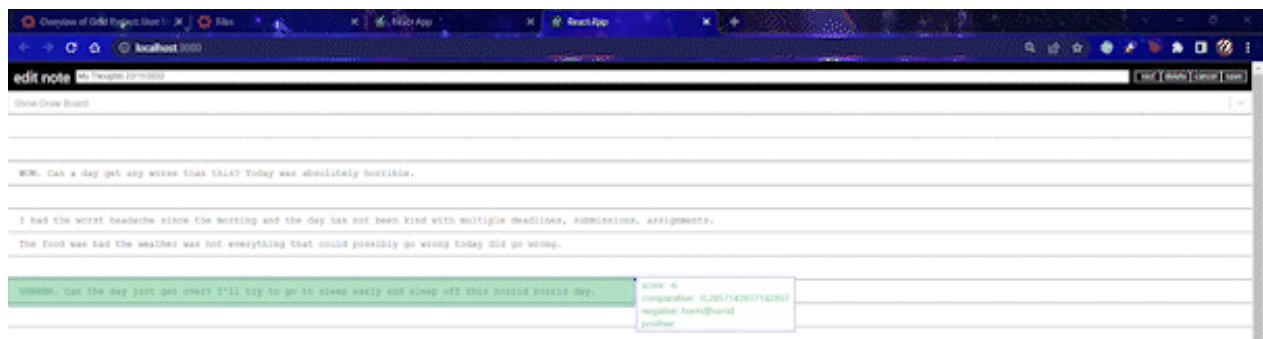
(Image 7)

Draw Board

The Draw Board gives the user the ability to write out their thoughts instead of having to type them out in order to give the authentic feel of journaling via writing. The Draw Board also gives the user the ability to wipe the entire screen by crossing out the page from the top left to the bottom right.

Current erase options for note-taking applications only have two options - erase all and erase as you go. We implement a way of erasing the journal entries and drawing area line by line rather than painstakingly removing every single area(Image 8). The user also can cross out the boxes on the end of the screen to erase that line completely. Draw Board can also be cleared by drawing a gesture from the top left of the screen to the bottom right of the screen. We can erase all content on the note and be able to start anew. This feature is the same as the Note Interface.

(Image 8)

Development Environment

The Application was built on a NodeJS backend with a ReactJS frontend. The library used for tracing lines onto the draw board was the React Konva library. For implementing Sentiment Analysis for the selected text we utilized the 'sentiment' library. The algorithm for identifying the line for erasing the page, identifying the cross at the end of the line, and the rectangle for the sentiment analysis were all our **original novel implementations**.

The idea behind erasing the content with interactive and gestural techniques lies in our aim to make the process of journaling easy and authentic. The gestures to clean the entire page resemble how we would scratch out a page we are not satisfied with. The gestures to remove a line resemble how we would invalidate lines written out with a cross.

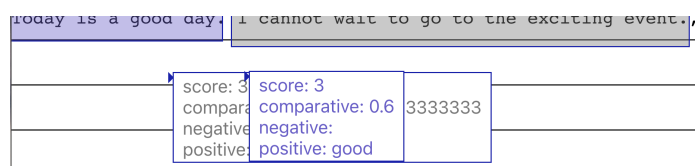## Sentiment Analysis Visualization

API: AFINN-based sentiment analysis for Node.js([LINK](#))

Score: Score calculated by adding the sentiment values of recognized words. Comparative: sum of each token / number of tokens. Positive: List of positive words in input string. Negative: List of negative words in input string.
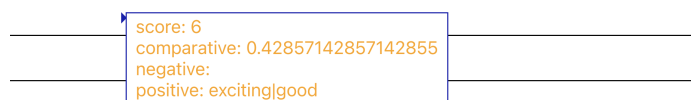
Again, every sentiment analysis visualization can be dragged and placed around the journal page, with different colors for different visualization boxes(Image 9&10). If we move one of the visualizations on top of another then they will combine and generate a new visualization of both selected texts(Image 11). This is a new interactive feature.
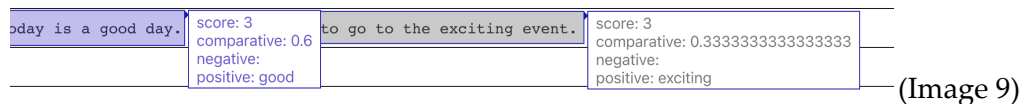
(Image 9)

(Image 10)

(Image 11)

The intuition behind being able to drag and visualize multiple sentiment boxes is to be able to analyze different parts of the journal entry for the sentiments associated with it. The sentiment analysis part helps the user remain in touch with how they're feeling on particular days and in particular parts of their journal entry. They can simply look at the customized visualization and see their mood change in diaries throughout a period of time.