Emotion Insight App

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Description

Emotion Insight is an advanced visualization tool designed to transform complex emotional data into easily interpretable graphs, tailored specifically for NLP and ML engineers, as well as a broader user base interested in sentiment analysis. This innovative tool enables the seamless upload and integration of custom models, offering users a personalized experience in analyzing and interpreting sentiment and emotion from textual data.

Problems

The company currently lacks a systematic approach to analyze the vast amount of feedback and public opinions available on social media platforms. This gap in our process makes it challenging to:

- Effectively evaluate the sentiment and emotional tone in customer feedback and public reactions to our products.
- Understand the social voice and perception of our marketing campaigns, including the public's response to our campaign.

Business Requirements:

The visualization tool should present grid graphs that are easy to understand, enabling NLP and ML engineers to upload their models. It should store the history of user inputs. Users can input a sentence or upload a text file to generate the visualization graph. The graph consists of interactive blocks, allowing users to delve into the details of each input. Additionally, the tool allows users to visualize the intensity of emotions in the input text.

Nouns and Verb

Nouns

- graphs
- NLP
- ML
- engineers
- models
- inputs
- Users
- sentence
- file
- blocks
- Emotions

Verbs

- upload
- store
- generate
- visualize

Summary of Classes, Attributes and Associations:

Grid(class):

- blocks
- sentiment

Block(class):

- color
- input
- sentiment
- sentimentVal
- width
- heigh

User(class):

- models
- inputs
- isEngineer

ML(class):

- NLP model
- creator
- accuracy
- precision
- auc
- recall

Rules

Functional

- The users are able to upload sentences, comments, tweets to view the overall intensity of positive or negative emotion.

- The users are able to upload their nlp model.
- The users can view the data of sub-elements that construct the colored matrix, allowing them to interpret the intensity of the overall emotion.

Non Functional

- Ensure efficient data handling by transmitting uploaded data to the Flask backend for processing.
- The NLP model processes data and integrates with the frontend, enabling the React application to dynamically render the colored matrix based on the analysis.
- Low render latency.
- Same input data should only be processed once.
- Input text can not be longer than 500 chars
- The frontend matrix visualization uses two differently colored blocks to represent the intensity of emotions.

Target Audience

- Data scientist, Machine Learning engineers those with tech savvy background
- Normal consumers that leave comments on the company product express their favorite of the product.
- Young individuals who are highly familiar with digital technologies, having grown up using the internet and various computing devices.
- Older individuals who have limited experience with apps and the internet. They may find technology intimidating or challenging to use and prefer straightforward, simple solutions.

Challenge Questions:

- What are some other aspects of sentimental data that the user wishes to explore?
- How should the visualization be designed to better present the data for easy understanding?
- Should the NLP models be shared with all users?

User Persona

Junior - Non Tech

Emily Nguyen is a Product Manager at a mid-sized advertising company specializing in organizing campaign events. Struggling to process and analyze the vast amount of unstructured feedback across multiple social media platforms.

Junior - Tech savvy

Alex Rivera is a ML/NLP Data Scientist at a tech startup focused on AI-driven analytics tools. To develop advanced sentiment and emotion analysis models that accurately interpret social media data. To contribute to the field of NLP with innovative algorithms that enhance understanding of human emotions and sentiments.

Senior - Non Tech
Sophia Martinez is a senior property Specialist. Over 15 years of experience in the real estate industry, focusing on property management, sales, and client advisory services. Expertise in residential and commercial properties, with a strong track record of successful transactions and high client satisfaction rates. Interested in researching valuable real estate.

Senior - Tech savvy
Michael Richardson, CEO of a mid-sized consumer electronics firm, aims to drive sustained growth by aligning product and marketing strategies with consumer needs. He focuses on maintaining a competitive edge through analytics and enhancing brand reputation and loyalty by actively responding to consumer sentiment.

User Stories

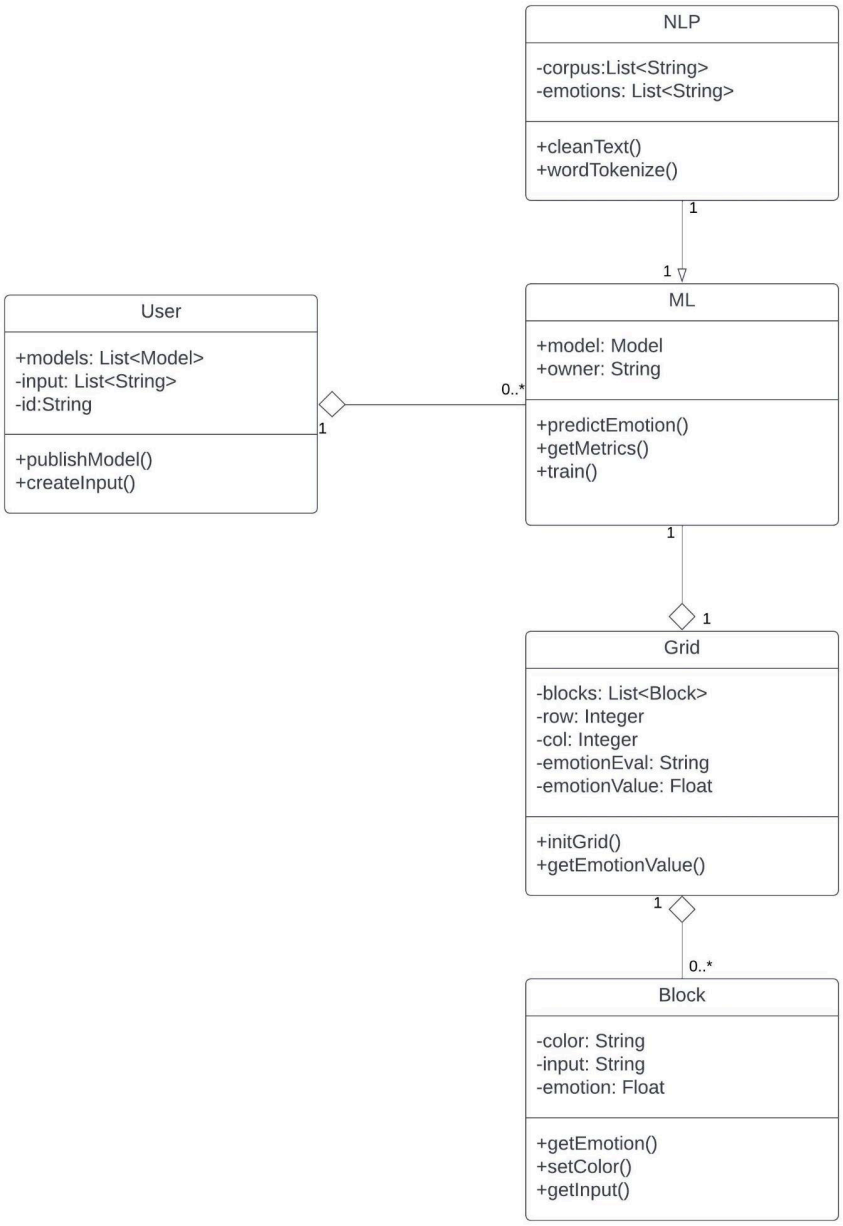
Junior - Non Tech
As Emily Nguyen, a Product Manager at an advertising company, I need a tool that simplifies the processing and analysis of unstructured feedback from social media, so I can efficiently organize campaign events based on actionable insights.

Junior - Tech Savvy
As Alex Rivera, an ML/NLP Data Scientist, I want to develop and implement cutting-edge sentiment and emotion analysis models, to accurately interpret social media data and contribute innovative algorithms to the NLP field.

Senior - Non Tech
As Sophia Martinez, a Senior Property Specialist with extensive real estate experience, I need tools to research valuable properties efficiently, enabling me to continue providing top-notch advisory services and maintain high client satisfaction.

Senior - Tech Savvy
As Michael Richardson, CEO of a technology firm, I aim to use advanced analytics to align our product and marketing strategies with consumer expectations, maintaining our competitive edge and enhancing brand loyalty through proactive engagement.

UML Class Diagram


NLP
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-emotions: List<String>
+cleanText()
+wordTokenize()
1
1
User
+models: List<Model>
-input: List<String>
-id:String
+publishModel()
+createInput()
0..*
1
ML
+model: Model
+owner: String
+predictEmotion()
+getMetrics()
+train()
1
1
Grid
-blocks: List<Block>
-row: Integer
-col: Integer
-emotionEval: String
-emotionValue: Float
+initGrid()
+getEmotionValue()
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0..*
Block
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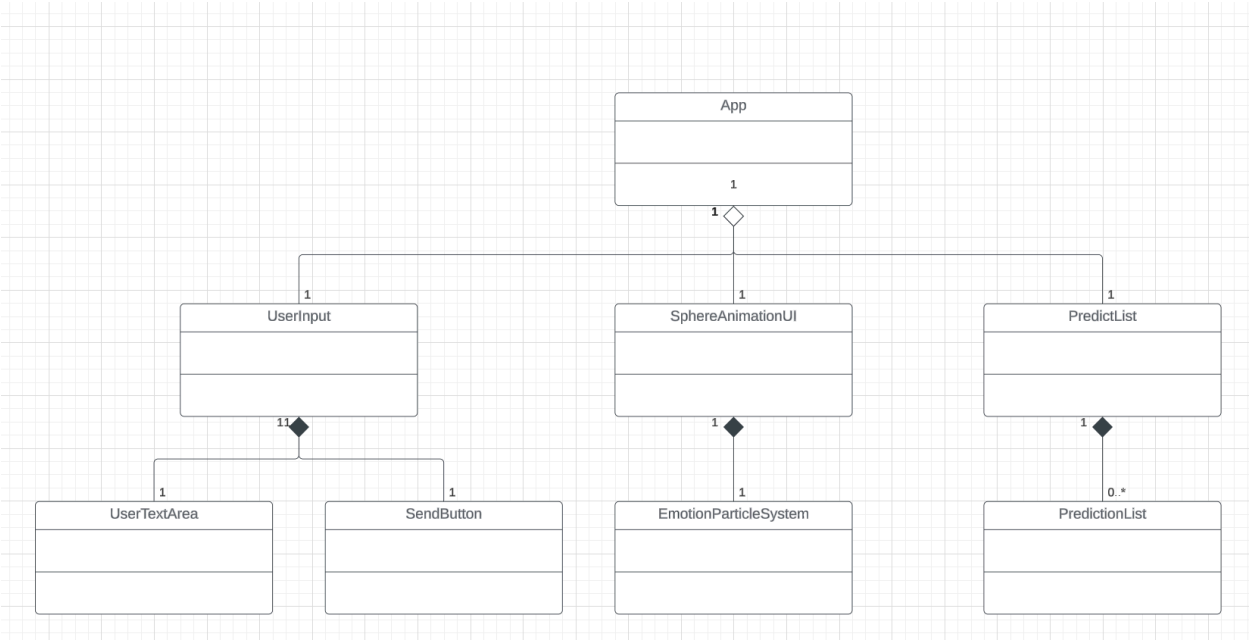
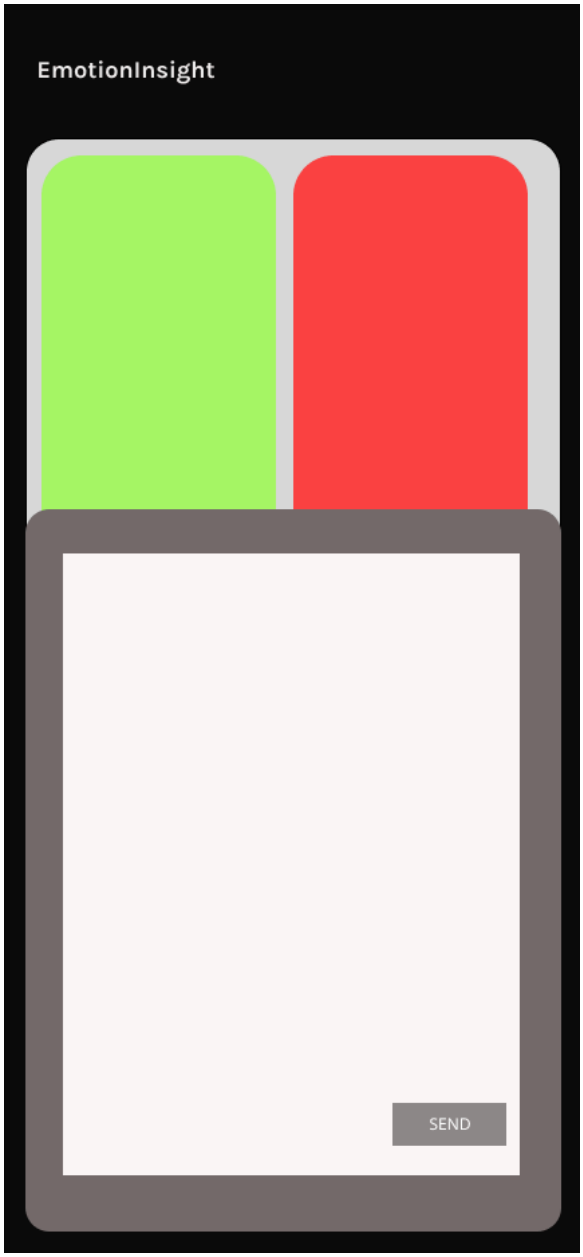
-input: String
-emotion: Float
+getEmotion()
+setColor()
+getInput()

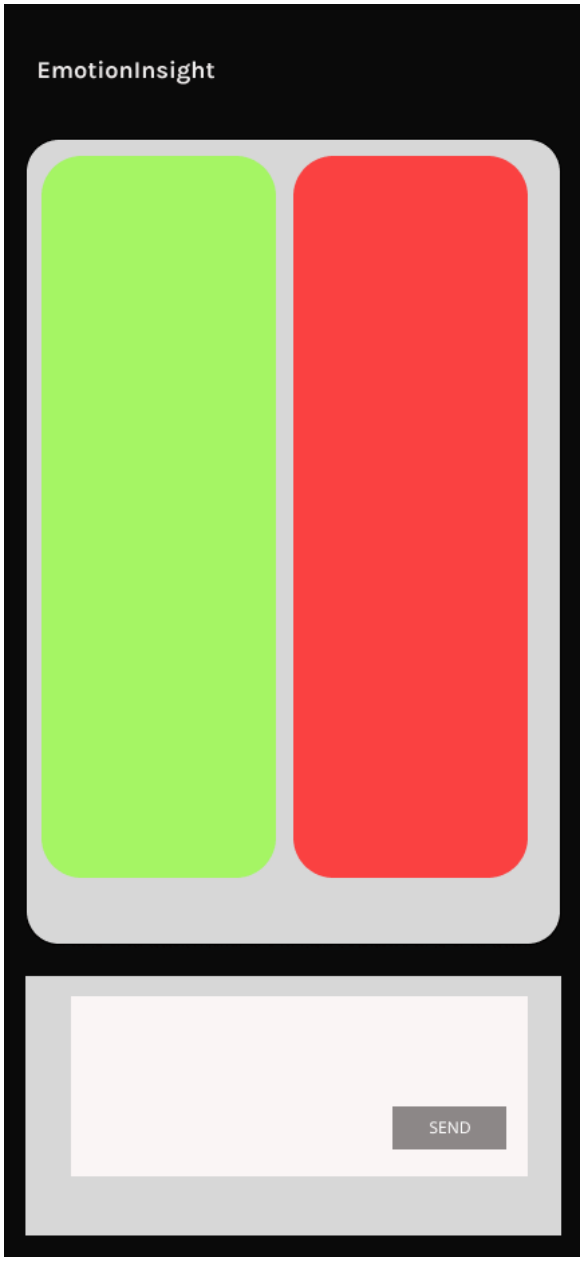

App
1
1
1
1
1
UserInput
SphereAnimationUI
PredictList
11
1
1
1
1
1
0..*
UserTextArea
SendButton
EmotionParticleSystem
PredictionList

Mockup

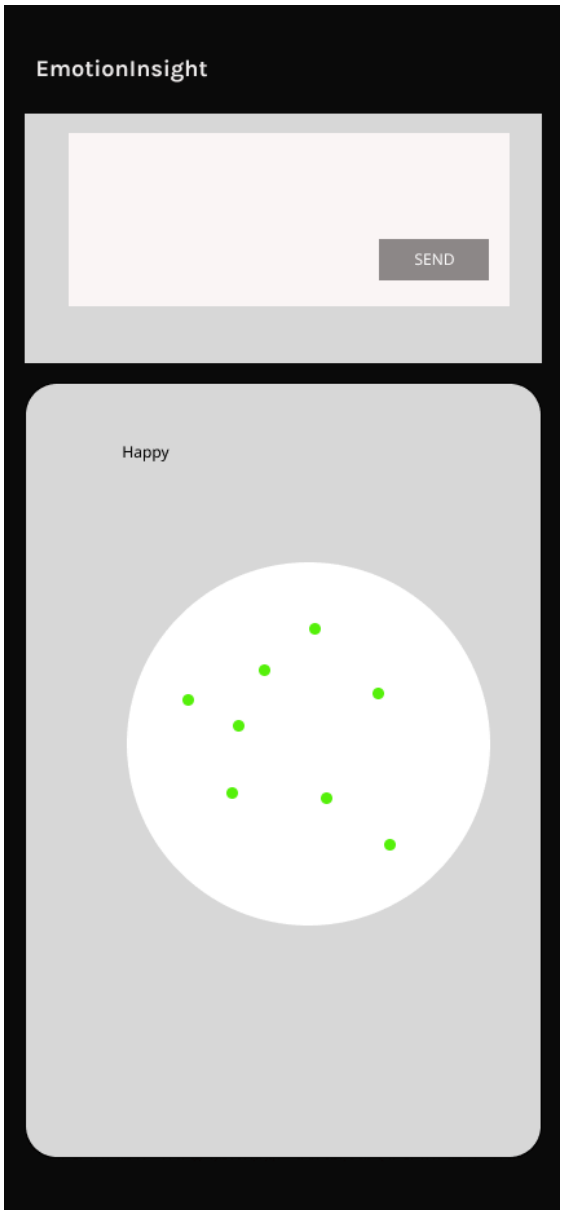
Mockup - User on typing



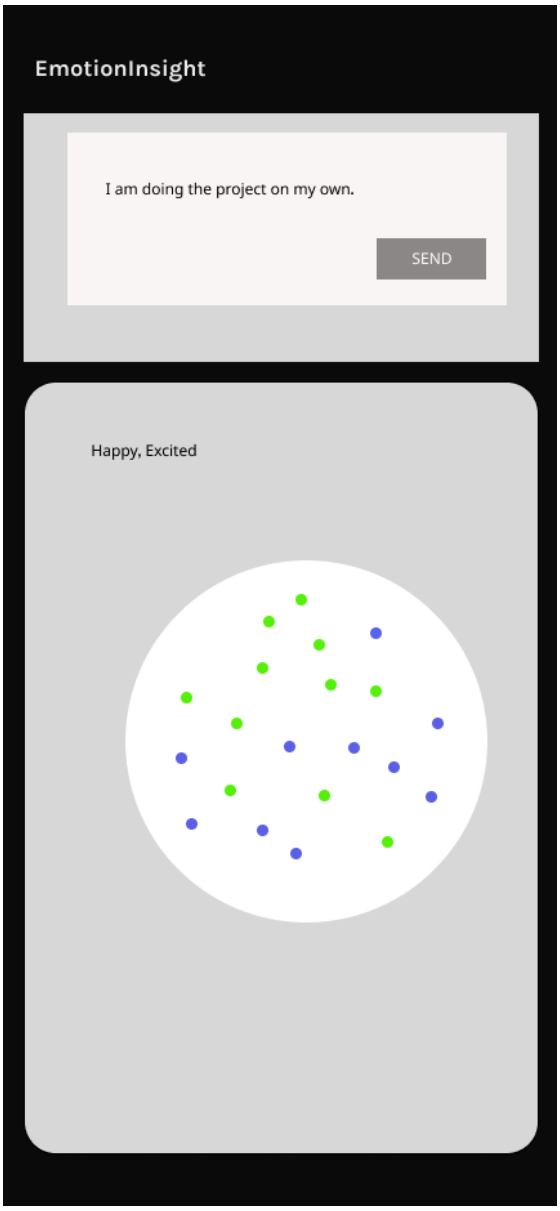
Mockup - User typing on finished



Mockup - 3d visual of single prediction



Mockup - 3d visual of multi prediction



Mockup - User prediction history