FLIP01 Final Assessment

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Overview

Problem Definition

Problem Description

Defn

With all of the tweets circulating every second it is hard to tell whether the sentiment behind a specific tweet will impact a company, or a person's, brand for being viral (positive), or devastate profit because it strikes a negative tone.

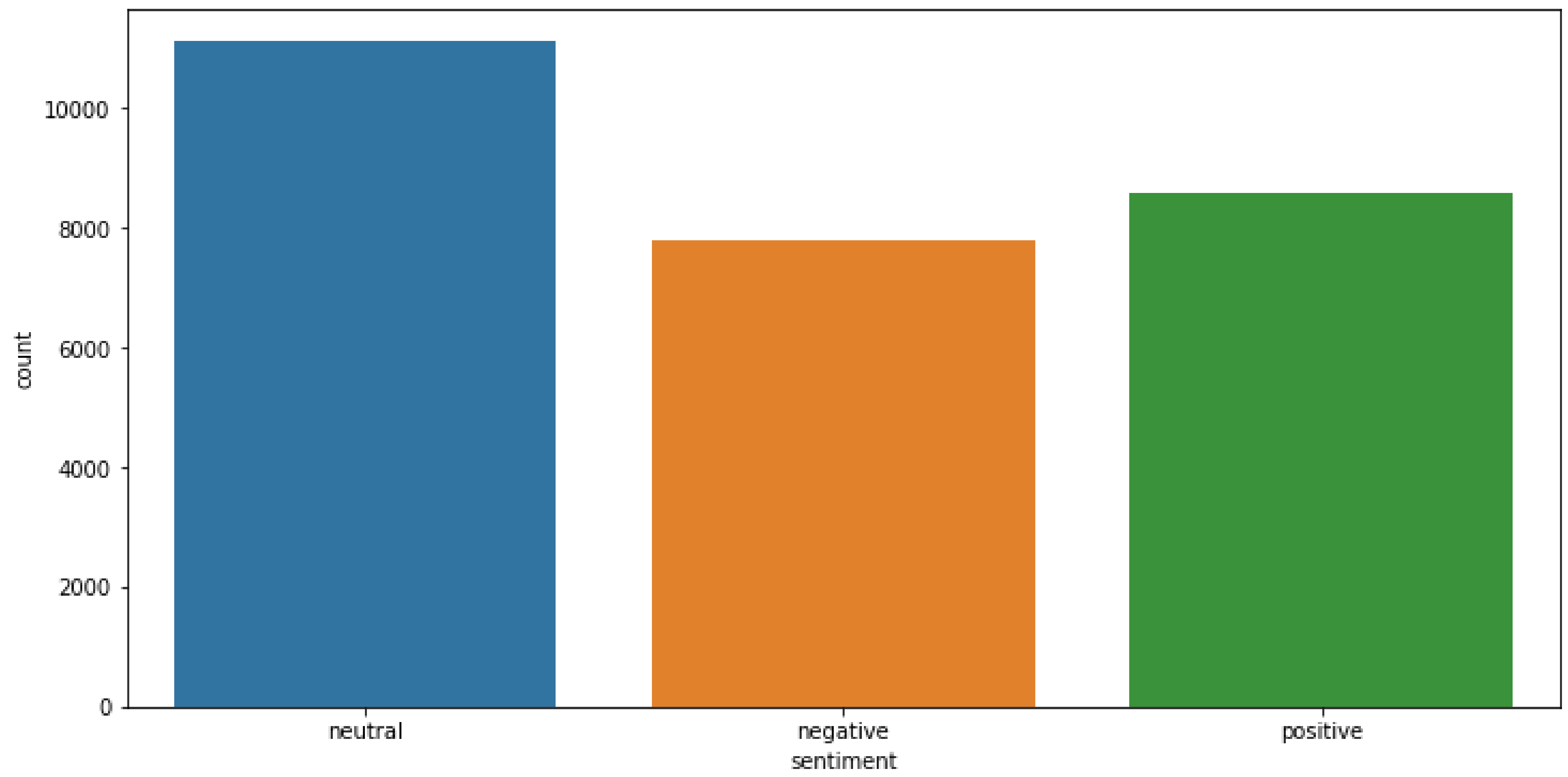
- What's the Sentiment of this tweet.
- What's the part of the tweet (word or phrase) that reflects the sentiment.

ID	text	selected_text	sentiment
$cb774db0d1$	Uh oh, I am sunburned	I am sunburned	negative
$549e992a42$	We saw that the baddie's the best	best	positive
$f84b89a828$	Sounds like me	Sounds like me	neutral

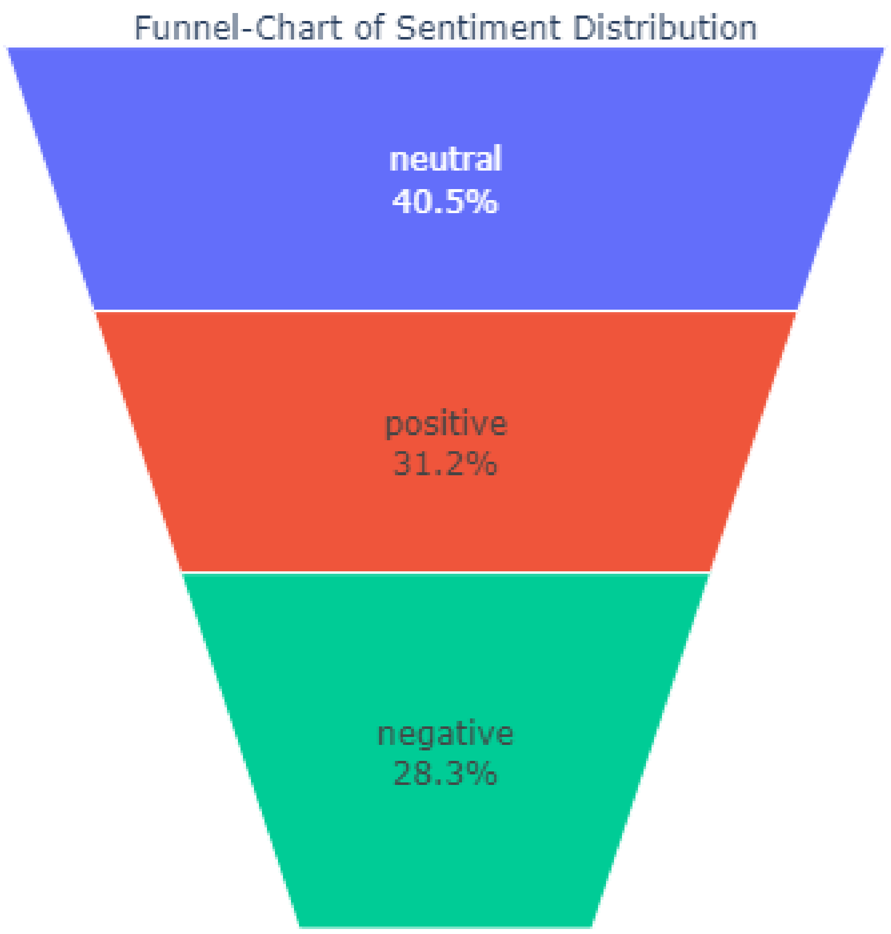
Data Visualization

Data Visualization

- First, check the data.The training set contains 27482 data.
    - Take a look at the proportion of different types of text in the training set
    - It can be seen that the number of three kinds of data is relatively average. In addition, there are more neutral texts.

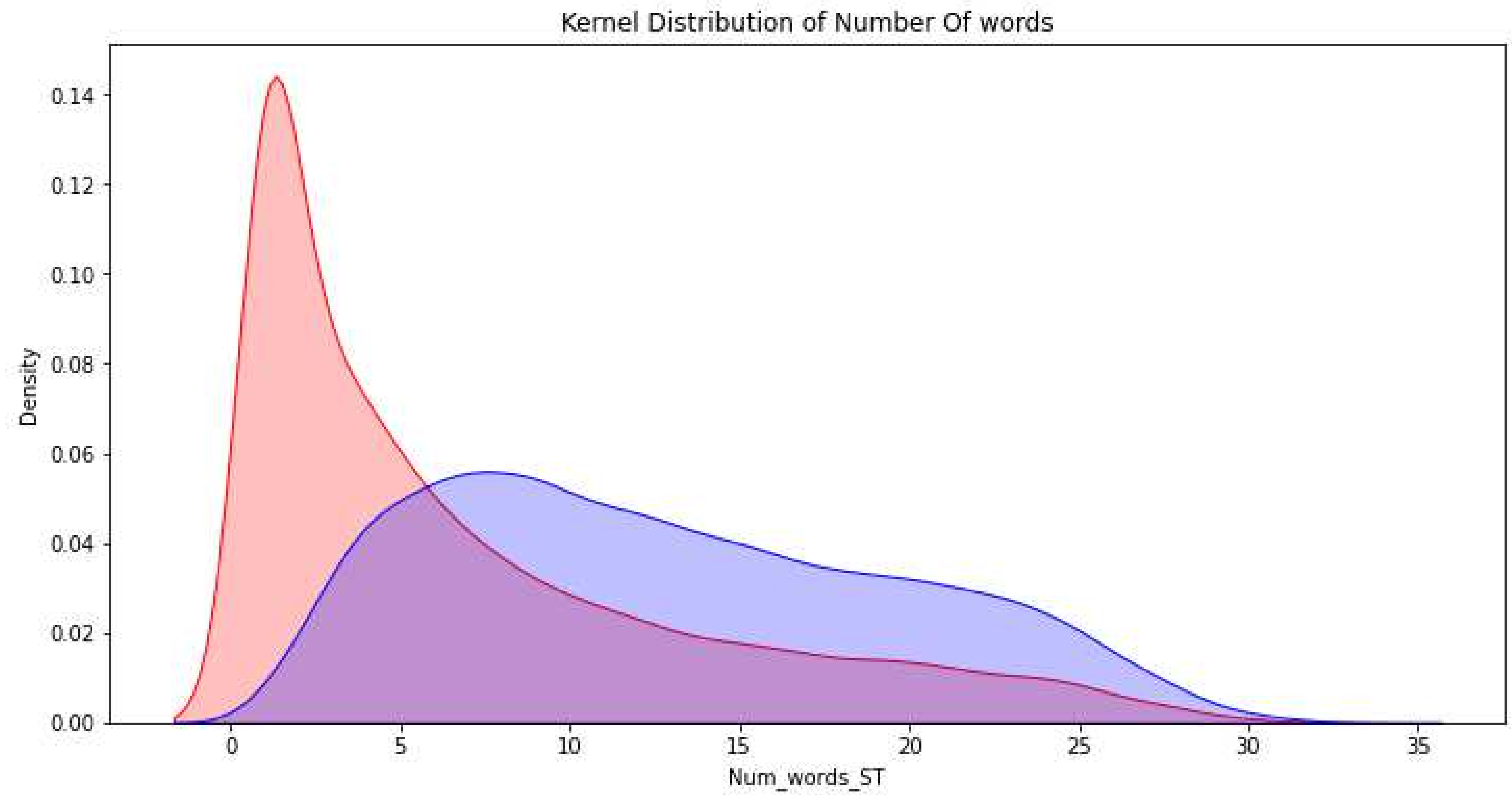


- Let’s take a look at the proportion of each category of text in another visualization method.
  - Most of them are neutral emotions,has 40.5 present.Positive are 31.2 persent.Negetive are 28.3 persent.



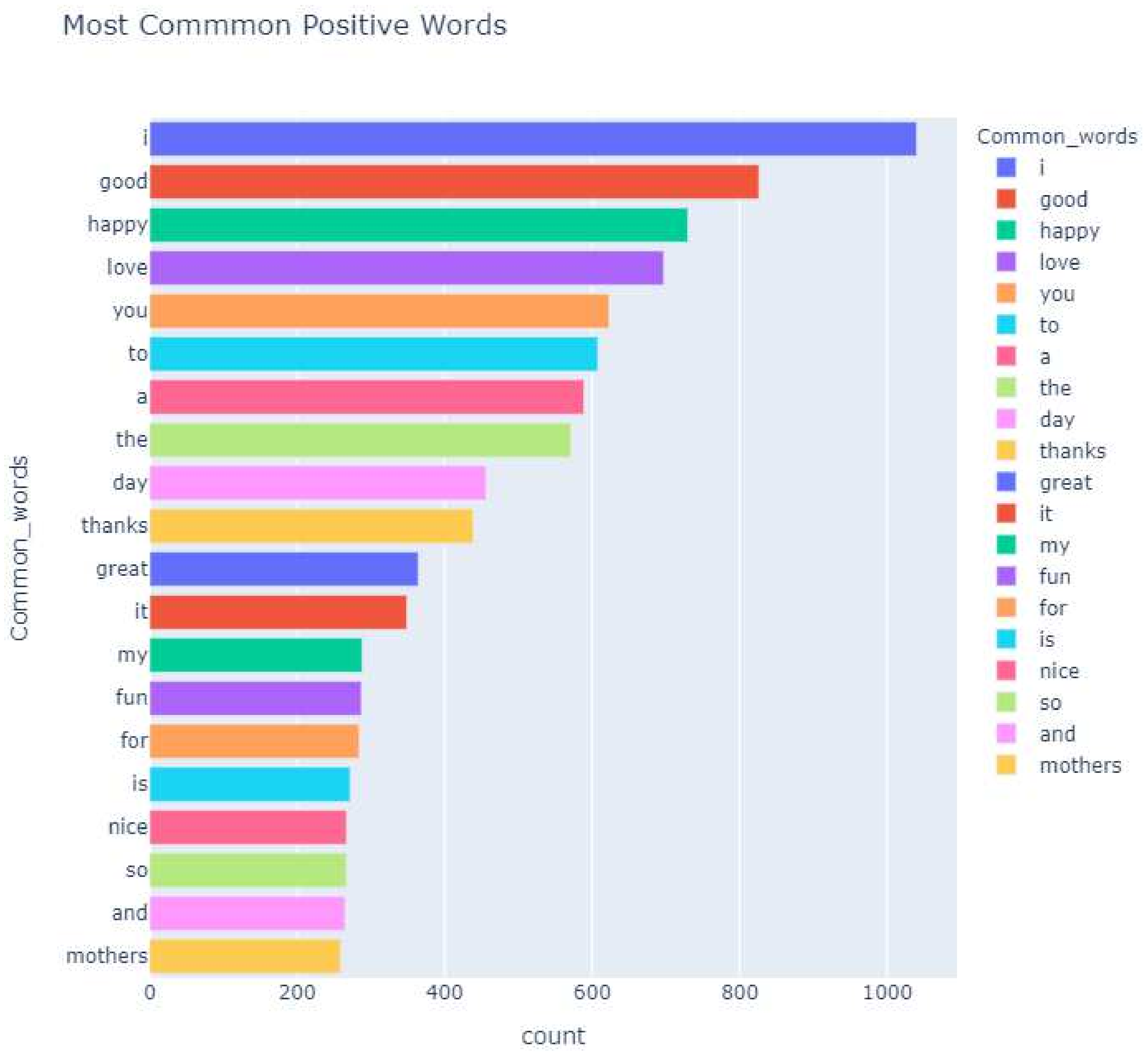
Data Visualization

- Count the distribution interval of the length of the given text and the selected text.

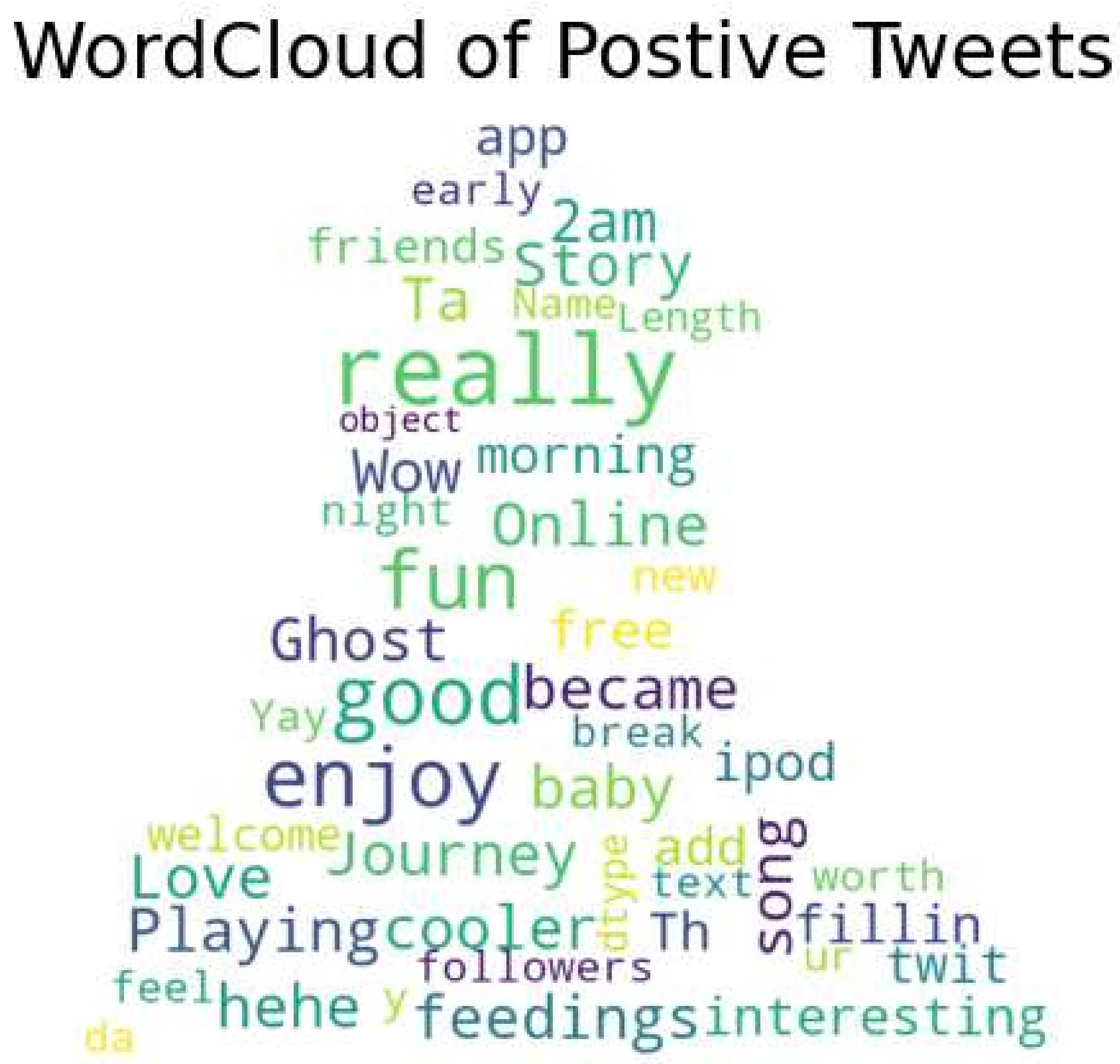


Data Visualization

- Statistics of positive emotions were selected in the text of the highest frequency of the first few words.

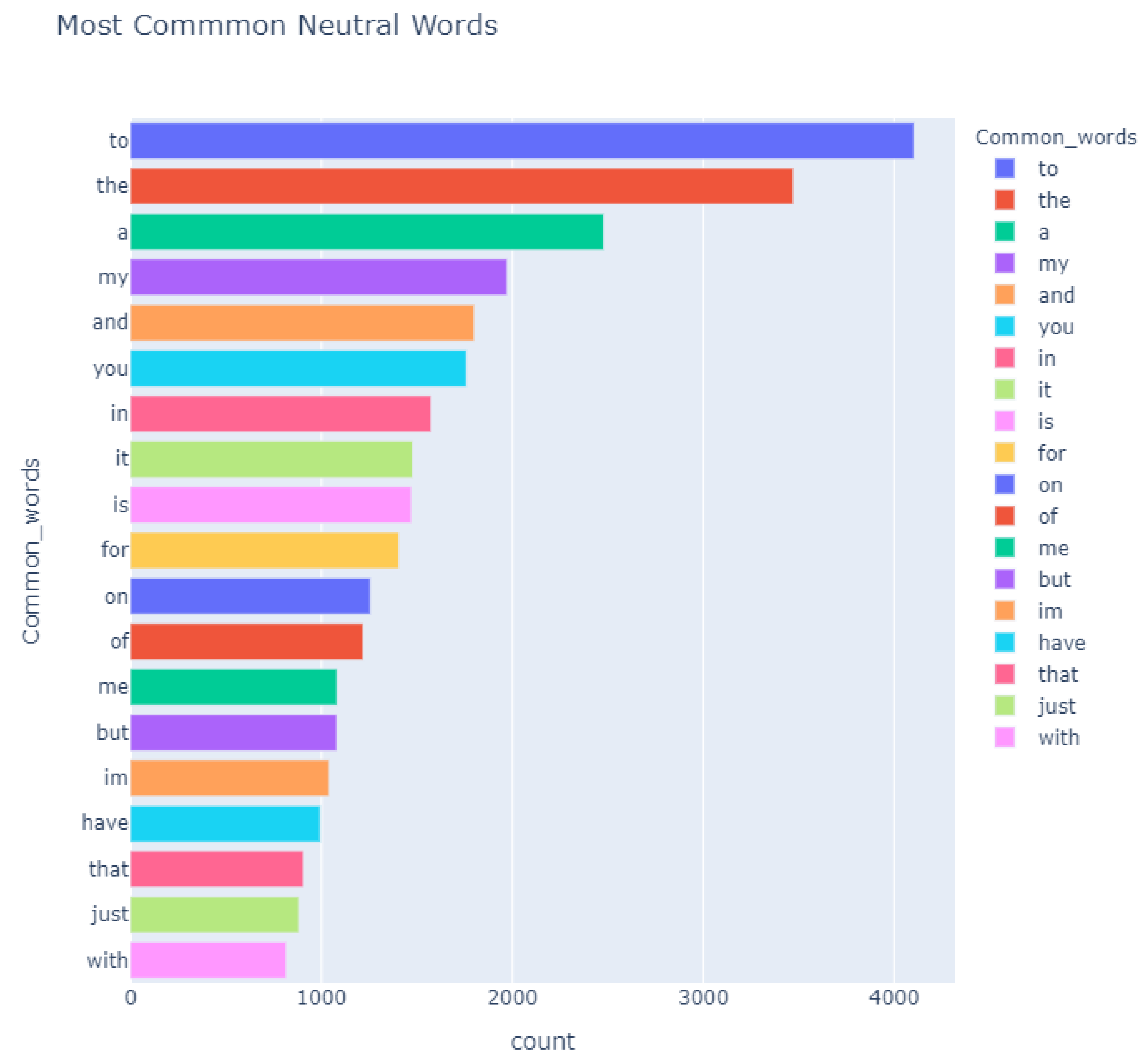


- The statistical results will be generated word cloud to more intuitive look at the frequency of words.



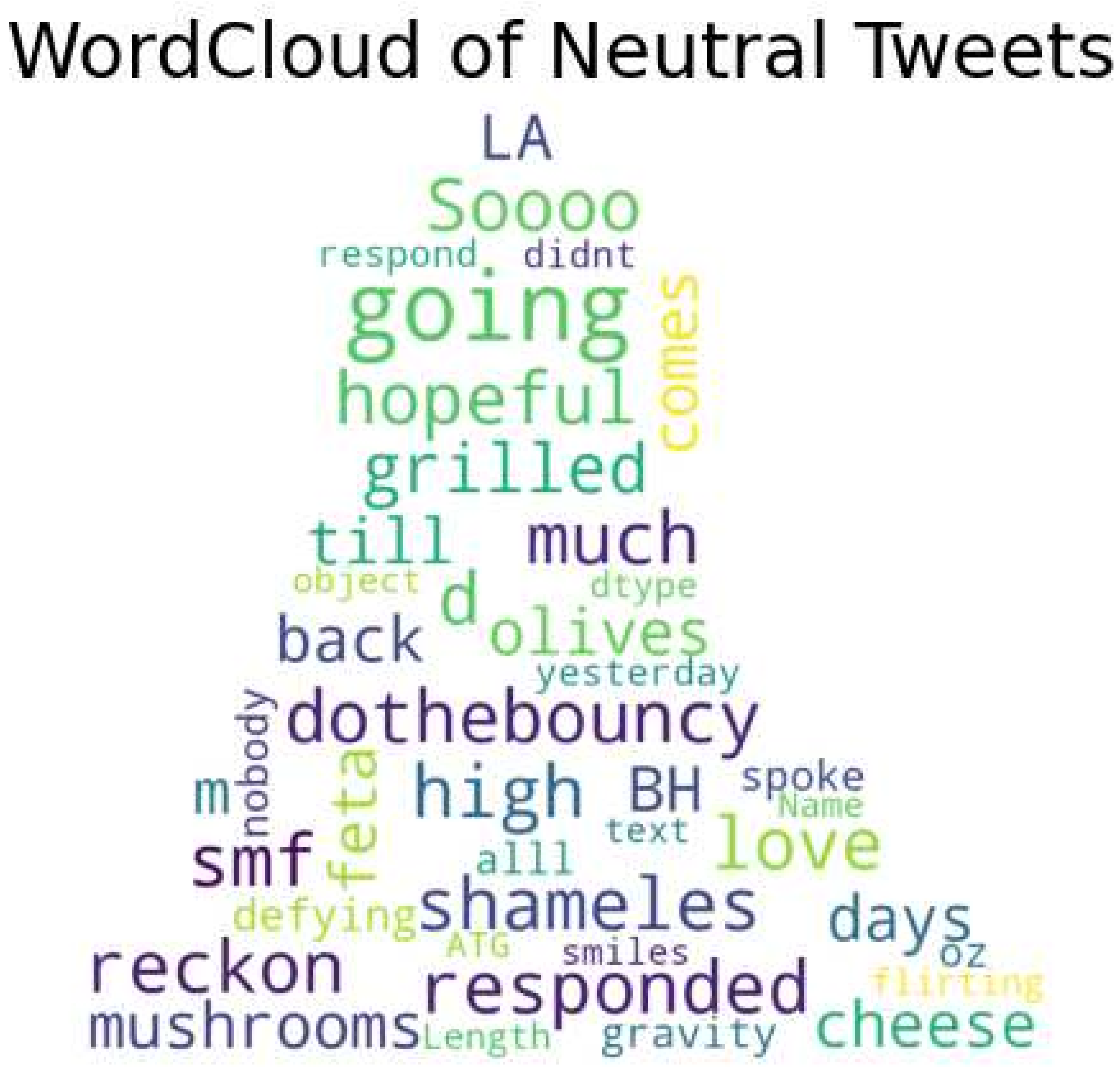
Data Visualization

- Statistics of neutral emotions were selected in the text of the highest frequency of the first few words.



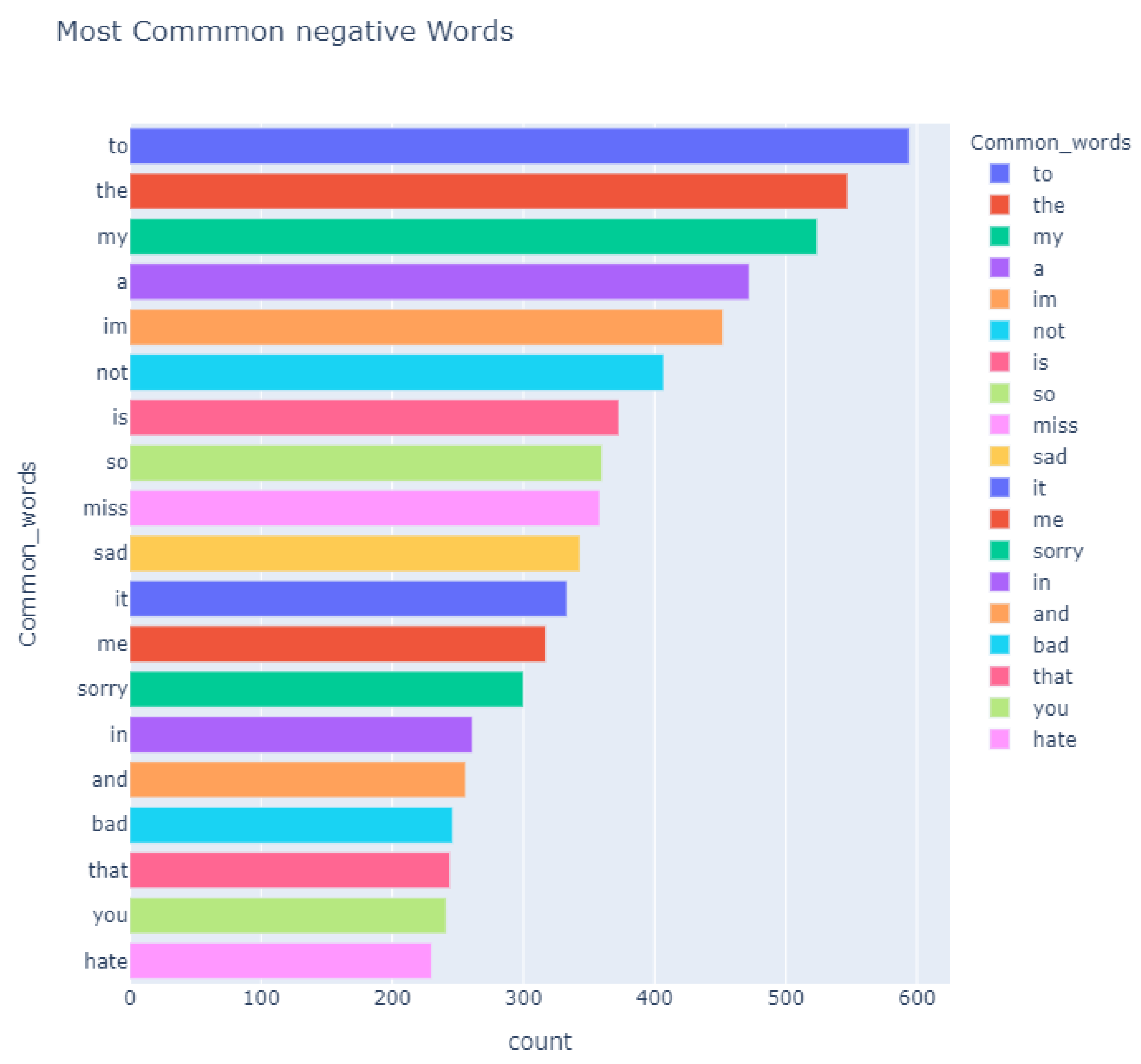
Data Visualization

- The statistical results will be generated word cloud to more intuitive look at the frequency of words.



Data Visualization

- Statistics of negative emotions were selected in the text of the highest frequency of the first few words.



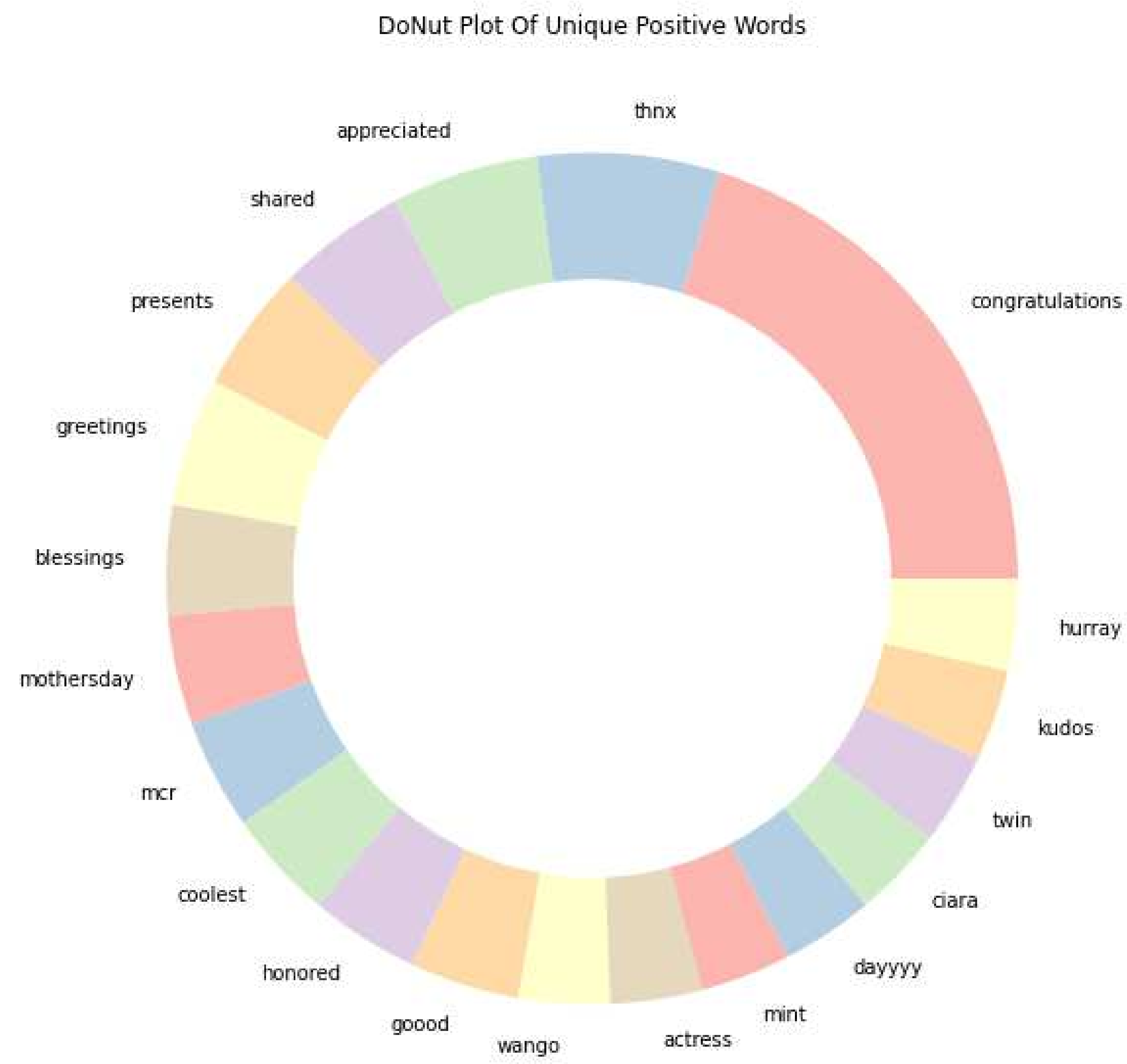
Data Visualization

- The statistical results will be generated word cloud to more intuitive look at the frequency of words.

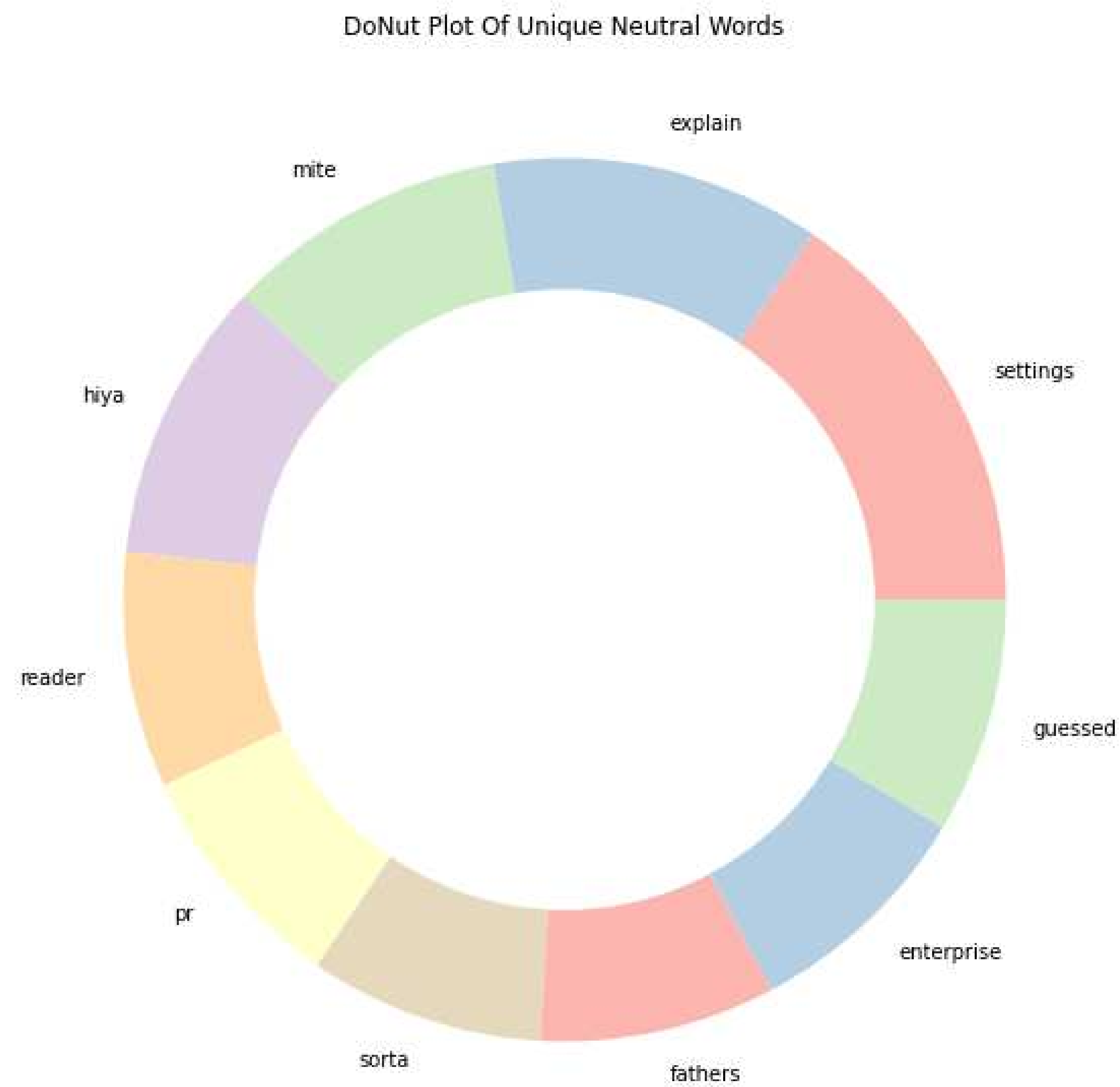
Data Visualization

- It can be seen that our previous statistical text contains some words without emotional tendency.
- After we delete these words, we count the frequency of each word.

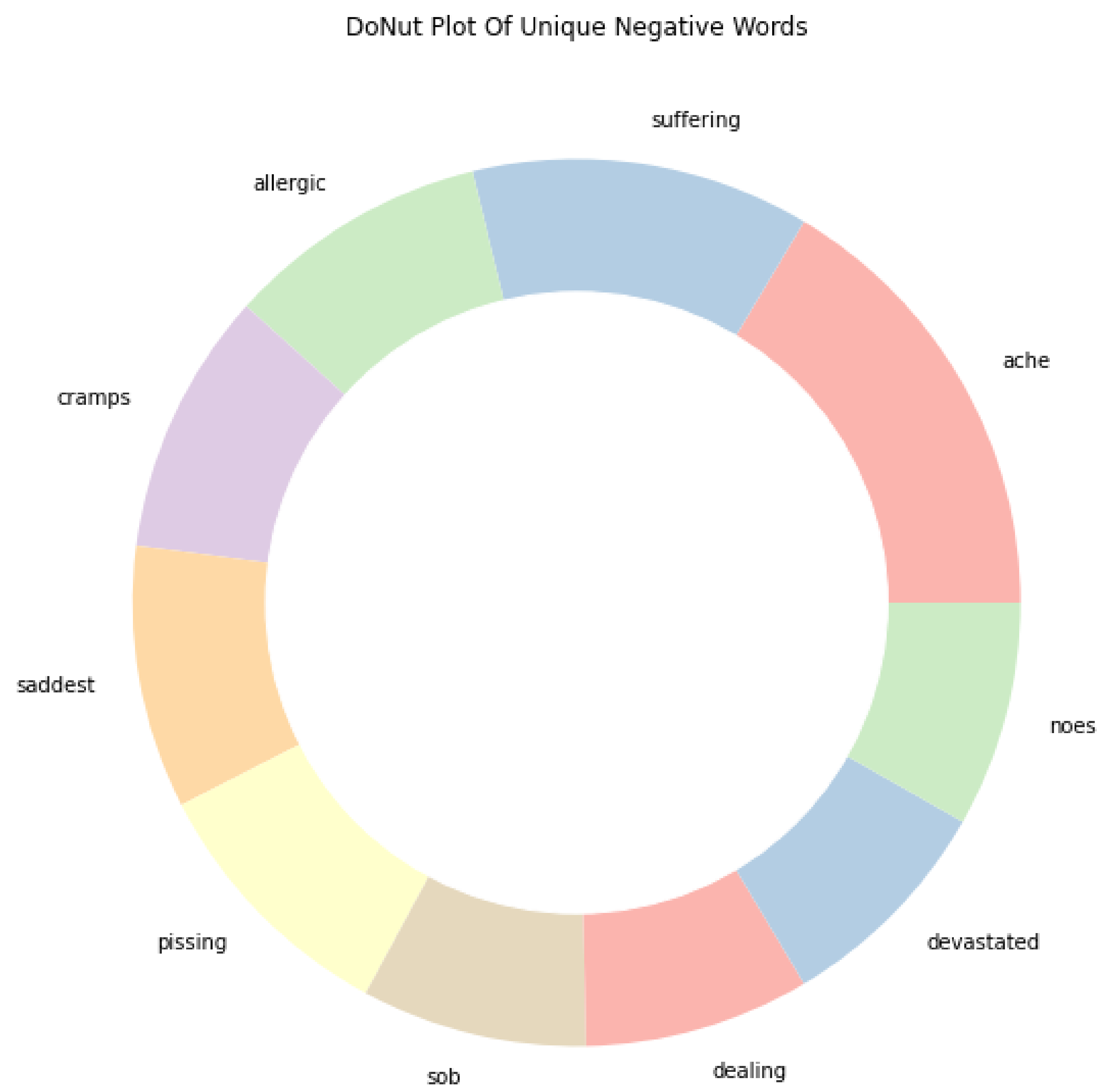
Data Visualization



Data Visualization



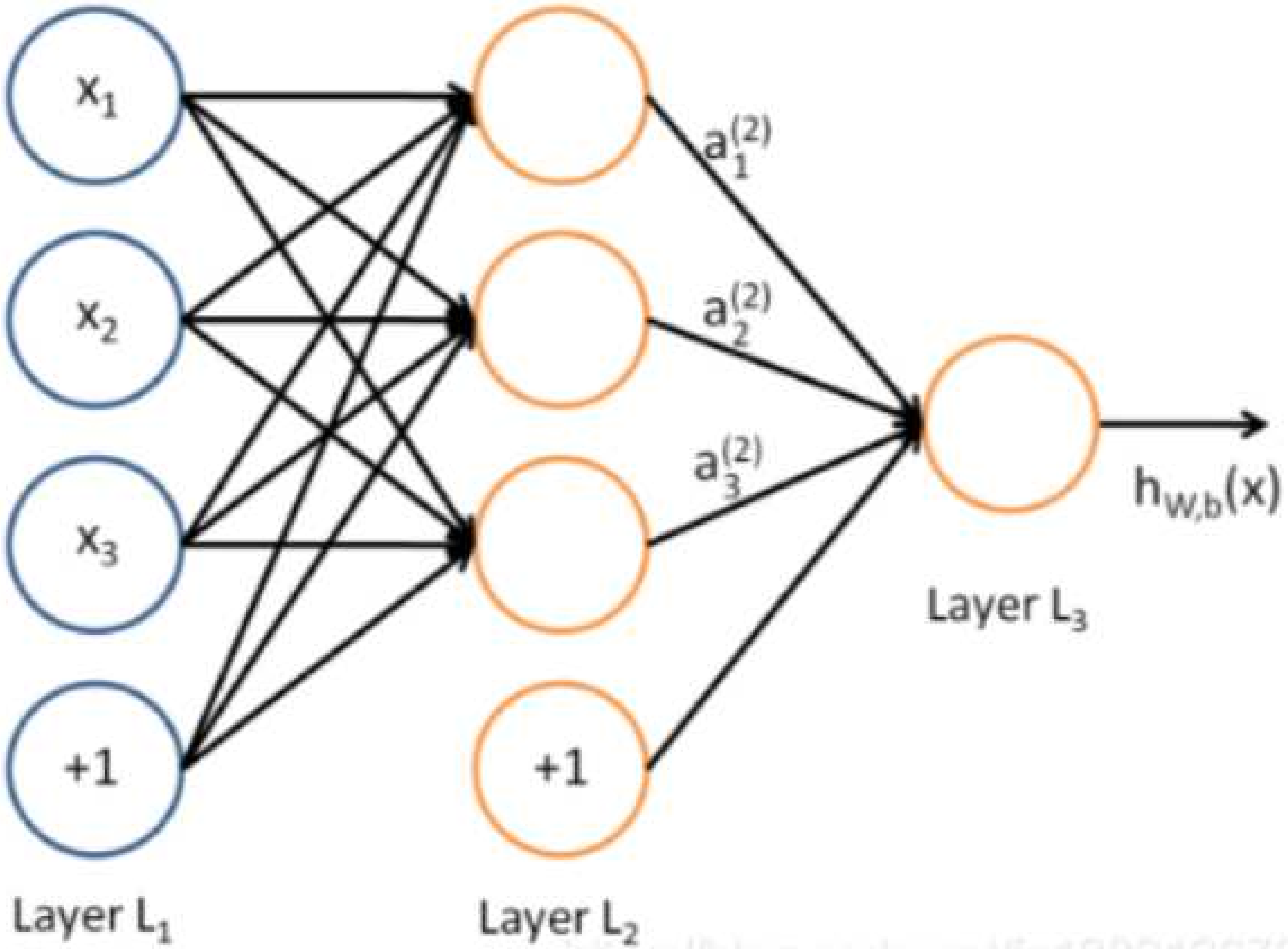
Data Visualization



Build The Model

Model:MLP

- First, the MLP model with simple structure is used.



Model:MLP

- Based on our previous data visualization.We set the MAX_LEN = 48.
- The learning rate is 0.8.
- Activation function is “Relu”.
- The output is one dimension and the convolution kernel size is 1 * 1.
- The optimizer is “SGD”.
- The loss function is “categorical_crossentropy”.
- Epochs = 10.

  - Finally, the loss rate of the trained model is 0.5393.

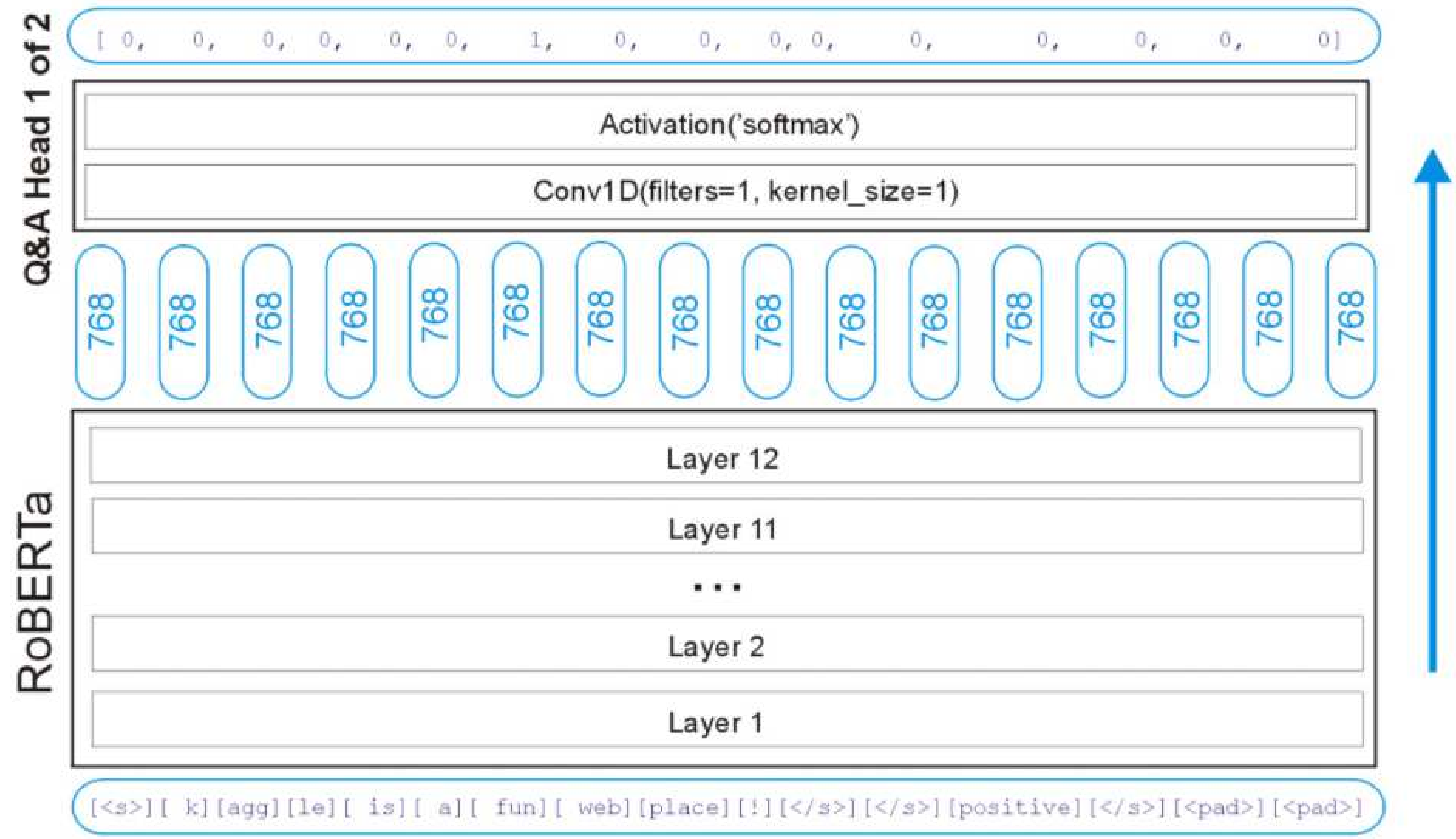
Model:roBERTa

In order to obtain higher accuracy, I choose the widely used model named roBERTa.

- Roberta: a robust method to optimize the pre training of Bert.
- Roberta is an improved algorithm of bert.
  - With bigger batch and more data, let the model train longer.
  - Removed the NSP (next sense prediction) task.
  - Train on a longer sequence.
  - Mask mechanism for dynamically modifying training data.

Model:roBERTa

- Activation function is “softmax”.
- The output is one dimension and the convolution kernel size is 1 * 1.



Model:roBERTa

- Based on our previous data visualization.We set the MAX_LEN = 48.
- The learning rate is 0.9.
- The optimizer is “Adam”.
- The loss function is “categorical_crossentropy”.
- Using k-fold cross validation, it is divided into five parts. Train five times.

- Finally, the loss rate of the trained model is 0.7.

Conclusion

Conclusion

- Formalize the problem of *Group Outlying Aspects Mining* by extending outlying aspects mining;
- Propose a novel method GOAM algorithm to solve the *Group Outlying Aspects Mining* problem;
- Utilize the pruning strategies to reduce time complexity.

Contact Information

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