MIT Academy of Engineering

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Emotion Detection in Twitter Posts using Natural Language Processing (NLP)

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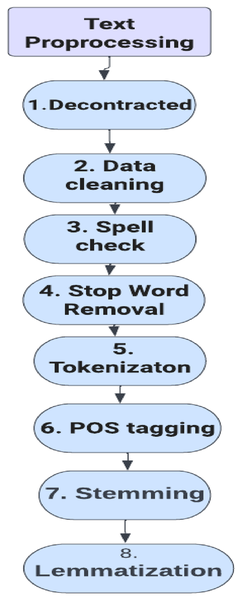
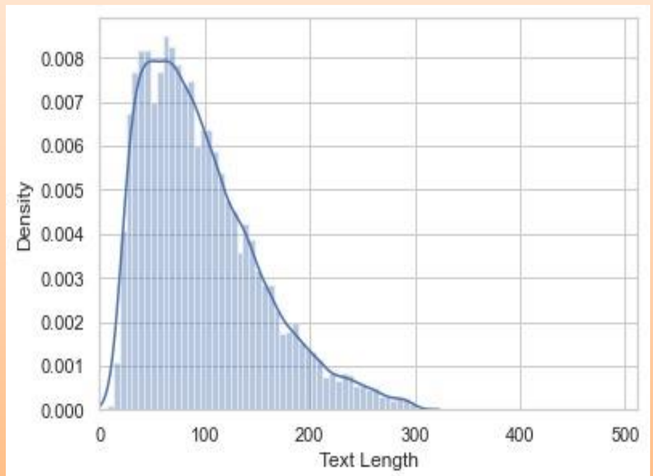
INTRODUCTION

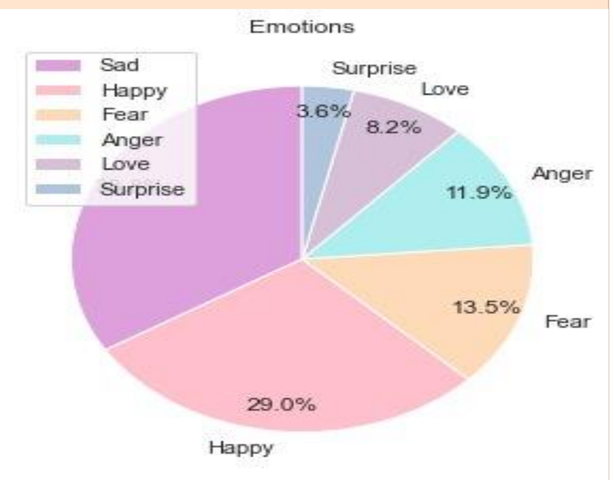
Emotion Detection using text is basically a content-based classification problem, connecting ideas from the areas of Natural Language Processing as well as Machine Learning.

Textual Analysis is the detailed approach to examine or gather one's information by using their text. As people have directly interacted with a computer or any technology by means of text because now day's maximum of material is accessible on the web in the form of text. Thus, it is useful to extract the feeling for different determination from text. Data mining is used to expert the system because large amount of data is needed for finding the emotions in textual data.



VISUALIZATION





Evaluation Matrics	Machine Learning Algorithms																											
	Logistic Regression						Random Forest						Multinomial Naïve Bayes						SVM						Decision tree					
	Anger	Fear	happy	love	Sad	Surprise	Anger	Fear	happy	love	Sad	Surprise	Anger	Fear	happy	love	Sad	Surprise	Anger	Fear	happy	love	Sad	Surprise	Anger	Fear	happy	love	Sad	Surprise
Precision	0.88	0.86	0.89	0.82	0.91	0.82	0.84	0.86	0.91	0.80	0.92	0.75	0.84	0.79	0.84	0.78	0.84	0.74	0.87	0.86	0.90	0.78	0.92	0.79	0.80	0.83	0.90	0.77	0.86	0.76
Recall	0.87	0.83	0.93	0.76	0.91	0.73	0.90	0.83	0.90	0.78	0.90	0.81	0.79	0.78	0.90	0.60	0.89	0.45	0.87	0.85	0.92	0.77	0.91	0.78	0.88	0.81	0.83	0.80	0.89	0.80
F1-Score	0.87	0.84	0.91	0.79	0.91	0.77	0.87	0.84	0.90	0.79	0.91	0.78	0.82	0.79	0.87	0.68	0.86	0.56	0.87	0.85	0.91	0.77	0.91	0.78	0.84	0.82	0.86	0.78	0.88	0.78
Support	816	178	2042	499	1710	215	816	718	2042	499	1710	215	816	718	2042	499	1710	215	816	718	2042	499	1710	215	816	718	2042	499	1710	215
Accuracy	88.7						0.7833						0.8275						0.88216						0.8485					

MODEL ACCURACY COMPARISON

From this result we can conclude that , Logistic Regression has higher accuracy than SVM and other algorithms. So, Logistic Regression is having the highest accuracy that is 88.35% hence it is the most optimal ML Algorithm for Emotion Detection in Test using NLP.

RESULT

Emotion Detection

```
inp = 'Y'
while(inp != 'N'):
    ip = input('Enter a Text: ')
    test_result = model_svc.predict(vectorizer.transform([ip]))
    if(test_result[0] == 'Happy'):
        print("\nEmotion: Happy\U0001F600")
    if(test_result[0] == 'Sad'):
        print("\nEmotion: Sad\N{loudly crying face}")
    if(test_result[0] == 'Angry'):
        print("\nEmotion: Angry\N{angry face}")
    if(test_result[0] == 'Fear'):
        print("\nEmotion: Fear\N{face screaming in fear}")
    if(test_result[0] == 'Surprise'):
        print("\nEmotion: Surprise\N{astonished face}")
    if(test_result[0] == 'Love'):
        print("\nEmotion: Love\N{kissing face}")
    inp = input("\nDo you want to continue? (Y/N): ")
```

```
Enter a Text: I feel good today

Emotion: Happy😀

Do you want to continue? (Y/N): Y
Enter a Text: I am scared of reptiles

Emotion: Fear😱

Do you want to continue? (Y/N): Y
Enter a Text: You are so caring

Emotion: Love😗

Do you want to continue? (Y/N): Y
Enter a Text: I am hurt by your words

Emotion: Sad😭

Do you want to continue? (Y/N): Y
Enter a Text: Amazed

Emotion: Surprise😲

Do you want to continue? (Y/N): N
```

CONCLUSION

This provides important insights into text-based emotion detection's existing approaches using machine learning. Different emotion types are detected through the integration of information from text-based emotion using popular ML algorithms like Logistic Regression, SVM, Decision tree, Naïve Bayes, etc.