DTSA 5511 Final

Deep learning for IMDB Review

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Overview

IMDB dataset having 50K movie reviews for natural language processing or Text analytics.

For binary sentiment classification

Develop basic LSTM model and its variations

Practice Huggingface transformers

https://github.com/gt2onew/dtsa5511/blob/main/week6/dtsa5511final.ipynb

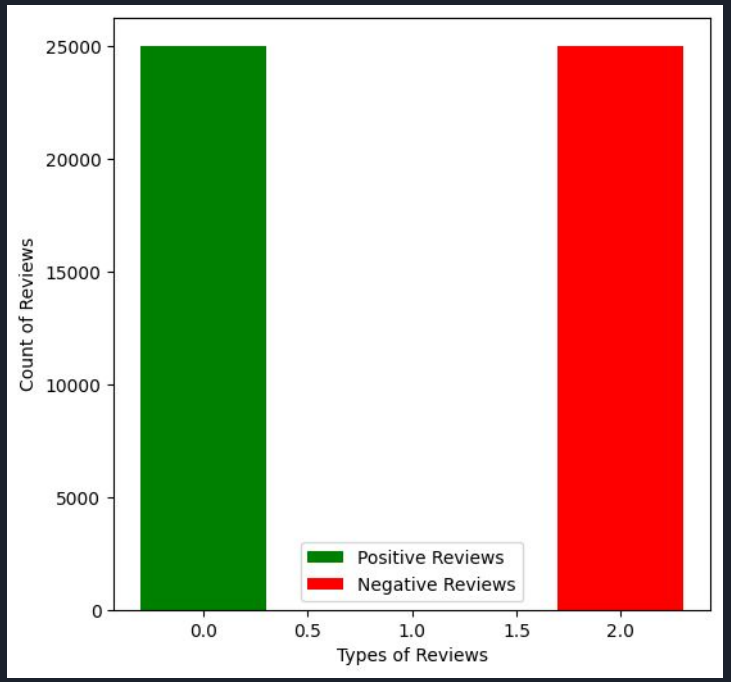
DataSet

```
df=pd.read_csv('IMDB Dataset.csv')
df.head()
```

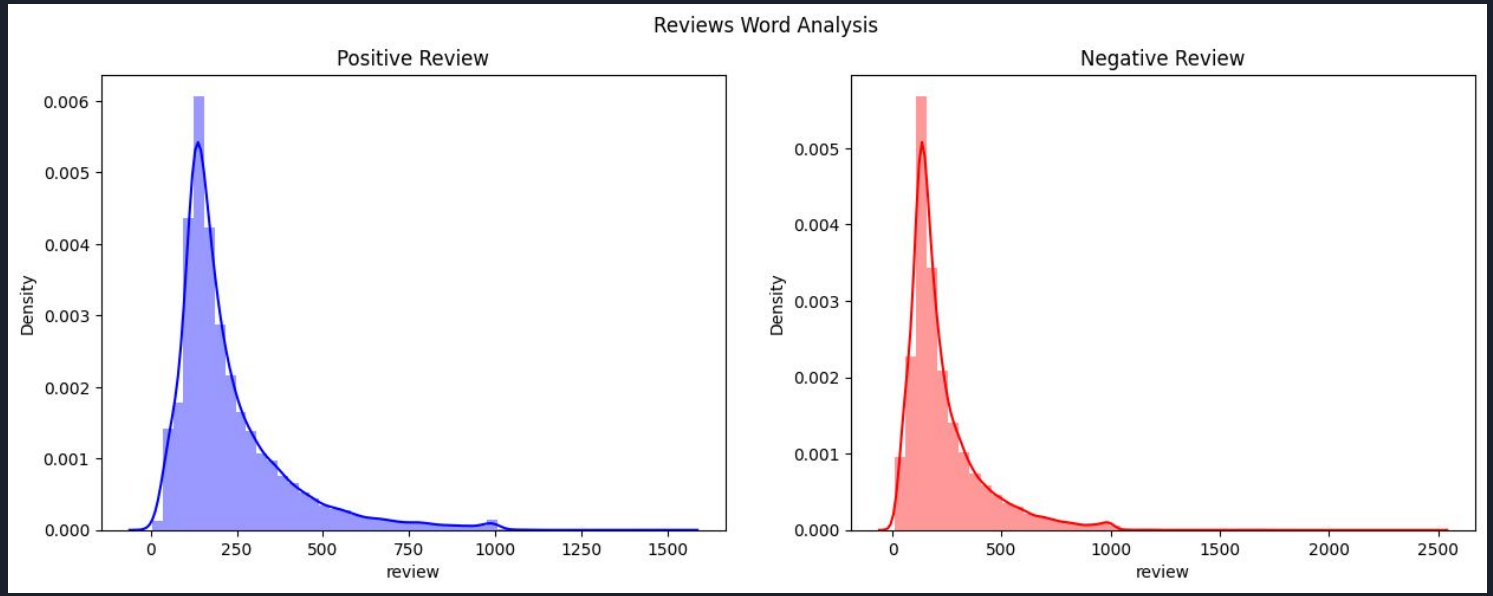
	review	sentiment
0	One of the other reviewers has mentioned that ...	positive
1	A wonderful little production. The...	positive
2	I thought this was a wonderful way to spend ti...	positive
3	Basically there's a family where a little boy ...	negative
4	Petter Mattei's "Love in the Time of Money" is...	positive

```
df.shape
```

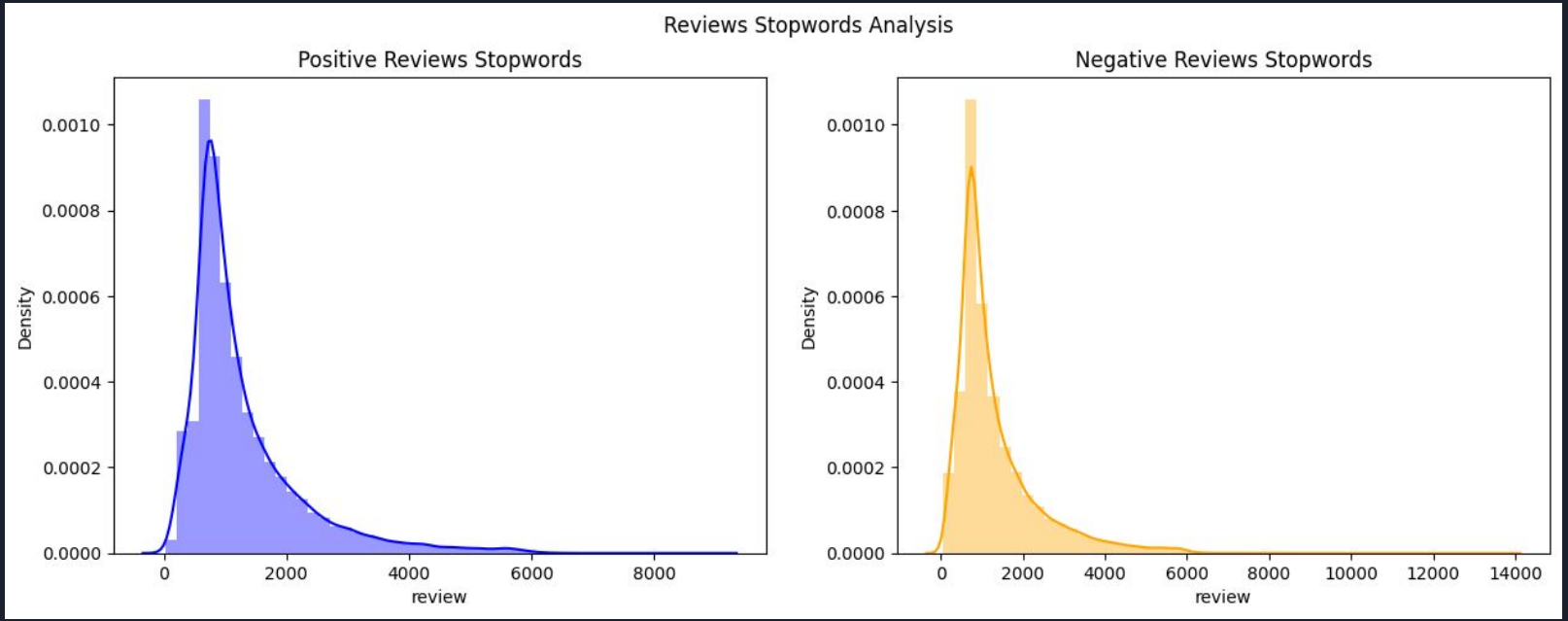
```
(50000, 2)
```



Statistics


Reviews Word Analysis
Positive Review
Density
0.006
0.005
0.004
0.003
0.002
0.001
0.000
0
250
500
750
1000
1250
1500
review
Negative Review
Density
0.005
0.004
0.003
0.002
0.001
0.000
0
500
1000
1500
2000
2500
review

Statistics


Reviews Stopwords Analysis
Positive Reviews Stopwords
Negative Reviews Stopwords
Density
review
0.0000
0.0002
0.0004
0.0006
0.0008
0.0010
0
2000
4000
6000
8000
10000
12000
14000

Data Cleaning

Data cleaning

- HTML codes
- URLs
- Emojis
- Stopwords
- Punctuations
- Expanding Abbreviations

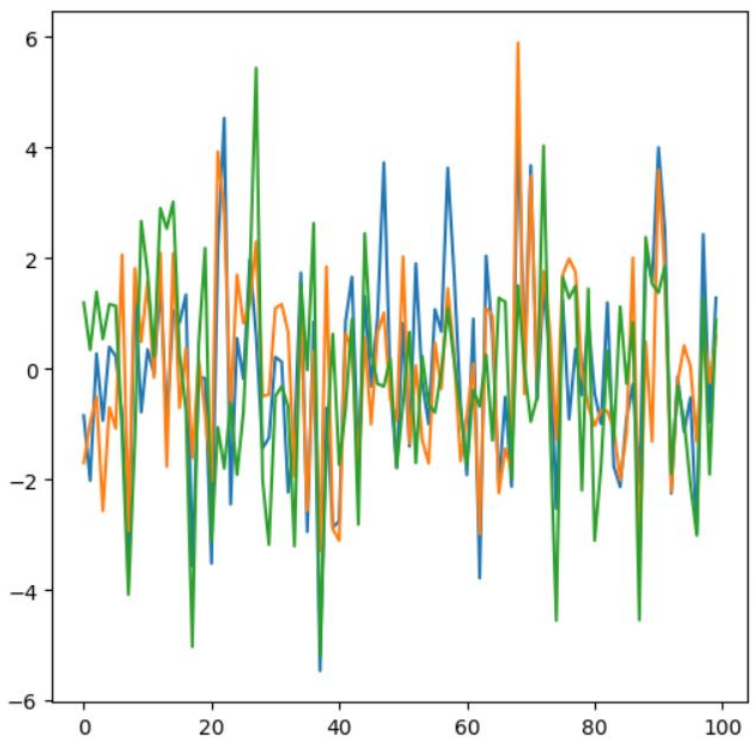
Wordcloud - positive label

Wordcloud - negative label

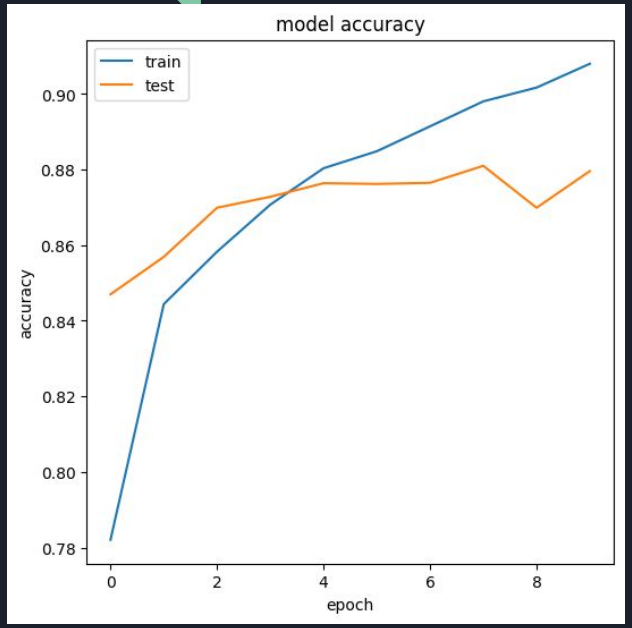
Vectorization and Embeddings

- Word2Vec
- Embedding matrix

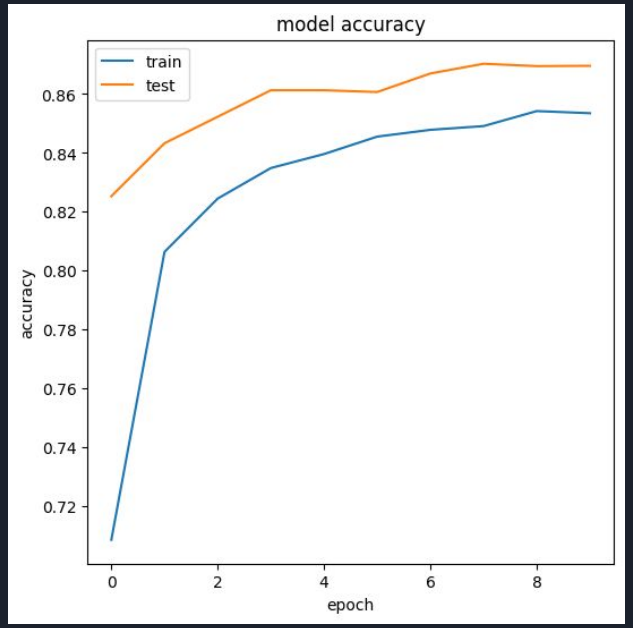
```
#Visualize the Word Vectors
plt.plot(loaded_model.wv['good'])
plt.plot(loaded_model.wv['great'])
plt.plot(loaded_model.wv['well'])

plt.show()
```



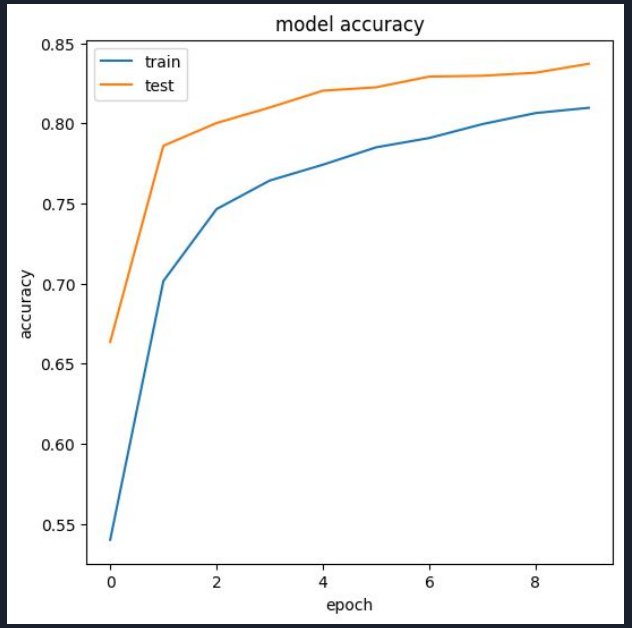
LSTM



Basic LSTM

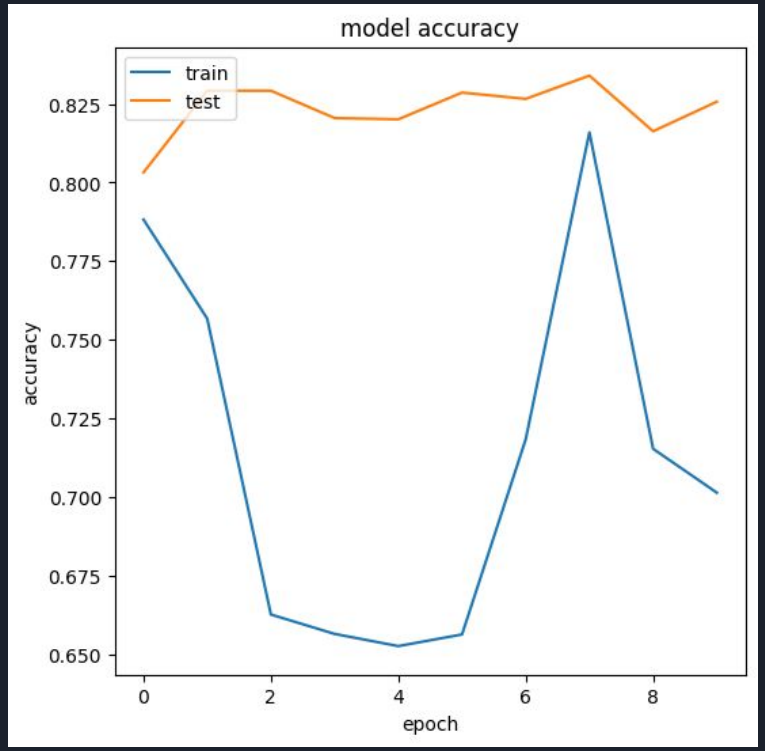


+Dense layer, dropout

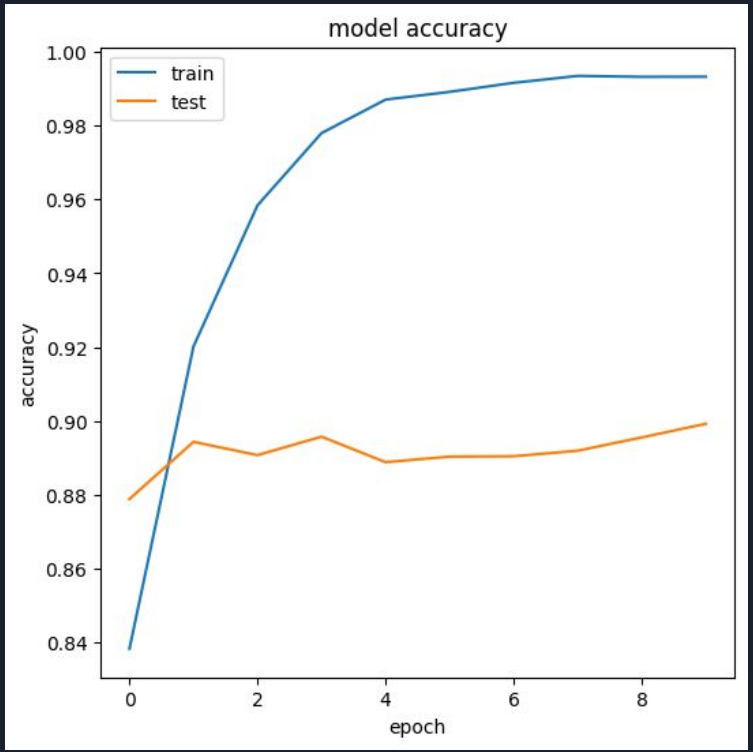


Extra LSTM layer

GPT-2 Pretrained



BERT pre-trained



Thank you!