4222-SURYA GROUP OF INSTITUTIONS

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3RD YEAR.

AI_PHASE 3:

Data preprocessing is the process of cleaning our data set. There might be missing values or outliers in the dataset.

PREPROCESSING THE GIVEN DATASET:

df = pd.read_csv('../input/covid-19-nlp-text-classification/Corona_NLP_train.csv',encoding='ISO-8859-1')

df_test = pd.read_csv('../input/covid-19-nlp-text-classification/Corona_NLP_test.csv')

	UserName	ScreenName	Location	TweetAt	OriginalTweet	Sentiment
0	3799	48751	London	16-03-2020	@MeNyrbie @Phil_Gahan @Chrisitv https://t.co/i...	Neutral
1	3800	48752	UK	16-03-2020	advice Talk to your neighbours family to excha...	Positive
2	3801	48753	Vagabonds	16-03-2020	Coronavirus Australia: Woolworths to give elde...	Positive
3	3802	48754	NaN	16-03-2020	My food stock is not the only one which is emp...	Positive
4	3803	48755	NaN	16-03-2020	Me, ready to go at supermarket during the #COV...	Extremely Negative

DATA INFO:

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 41157 entries, 0 to 41156 Data
columns (total 6 columns):
 #   Column   Non-Null Count Dtype
--- ------   -------------- -----
0   UserName   41157 non-null int64
1   ScreenName   41157 non-null int64
2   Location   32567 non-null object
3   TweetAt   41157 non-null object
4   OriginalTweet 41157 non-null object 5   Sentiment   41157 non-null object dtypes: int64(2), object(4) memory usage: 1.9+ MB

DUPLICATE TWEET:

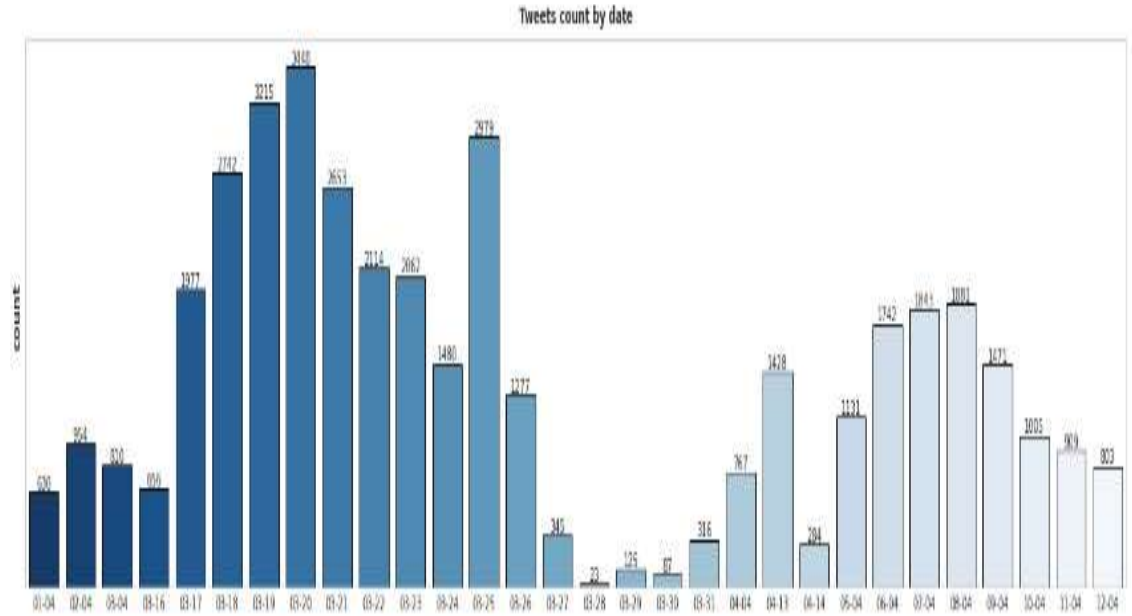
df.drop_duplicates(subset='OriginalTweet',inplace=True)

In [93]: df.info()

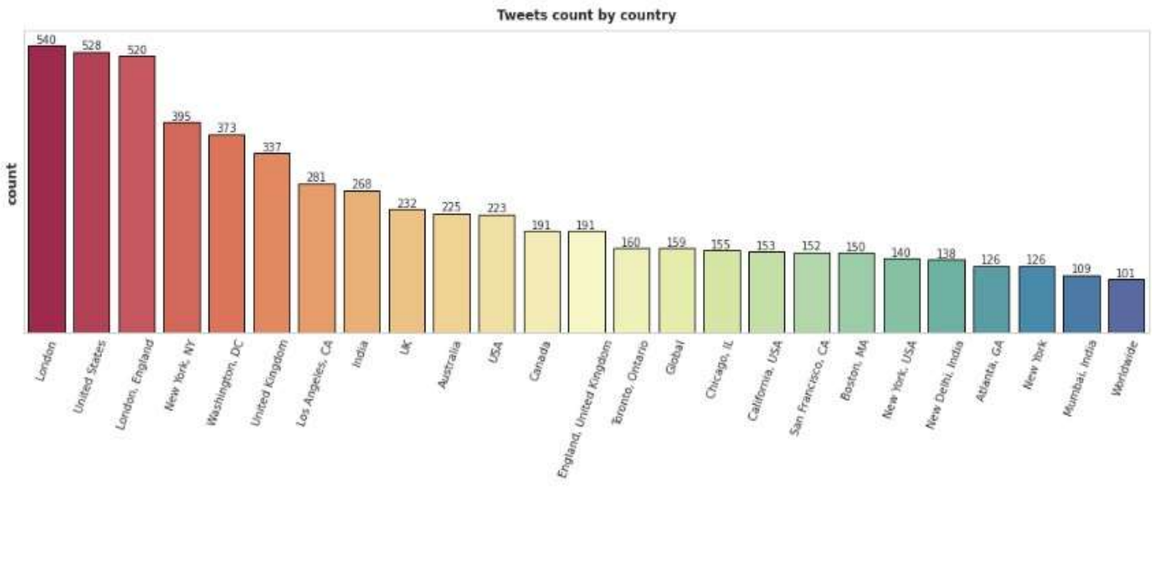
<class 'pandas.core.frame.DataFrame'>
Int64Index: 41157 entries, 0 to 41156 Data
columns (total 6 columns):
 #   Column   Non-Null Count Dtype
--- ------   -------------- -----
0   UserName   41157 non-null int64
1   ScreenName   41157 non-null int64
2   Location   32567 non-null object
3   TweetAt   41157 non-null datetime64[ns]
4   OriginalTweet 41157 non-null object   5   Sentiment   41157 non-null object

dtypes: datetime64[ns](1), int64(2), object(3)

TWEETS COUNT BY DATA



TWEETS PER COUNTRY AND CITY



TWEETS DEEP CLEANING

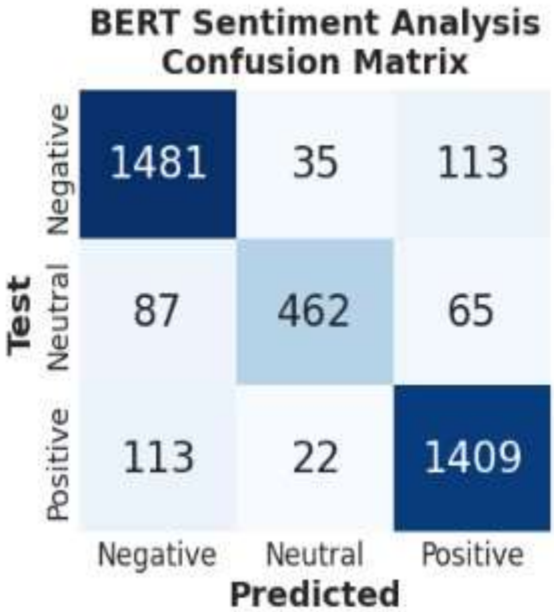
df = df[['OriginalTweet','Sentiment']]

In [99]:

```
df_test = df_test[['OriginalTweet','Sentiment']]
```

Then we define custom functions to clean the text of the tweets.

```
In [100]: linkcode
##CUSTOM DEFINED FUNCTIONS TO CLEAN THE TWEETS

#Clean emojis from text def
strip_emoji(text):
    return re.sub(emoji.get_emoji_regexp(), r"", text) #remove emoji

#Remove punctuations, links, mentions and \r\n new line characters def strip_all_entities(text):
text = text.replace('\r', '').replace('\n', ' ').replace('\n', ' ').lower() #remove \n and \r and lowercase
text = re.sub(r"(?:\@|https?\://)\S+", "", text) #remove links and mentions
    text = re.sub(r'[^\x00-\x7f]',r'', text) #remove non utf8/ascii characters such as '\x9a\x91\x97\x9a\x9
7'
    banned_list= string.punctuation + 'Ã'+'±'+'ã'+'¼'+'â'+'»'+'§'
    table = str.maketrans('', '', banned_list)
text = text.translate(table)     return text
```

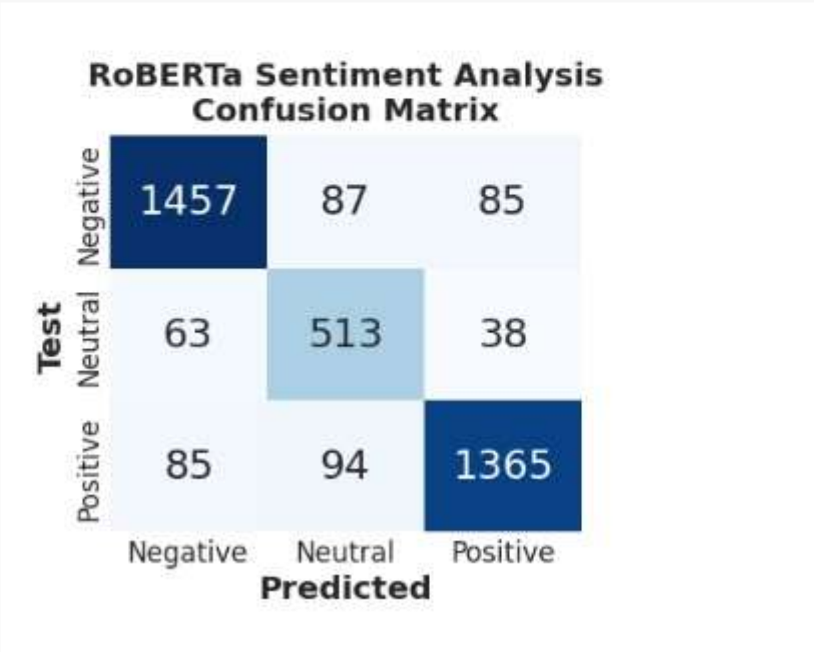


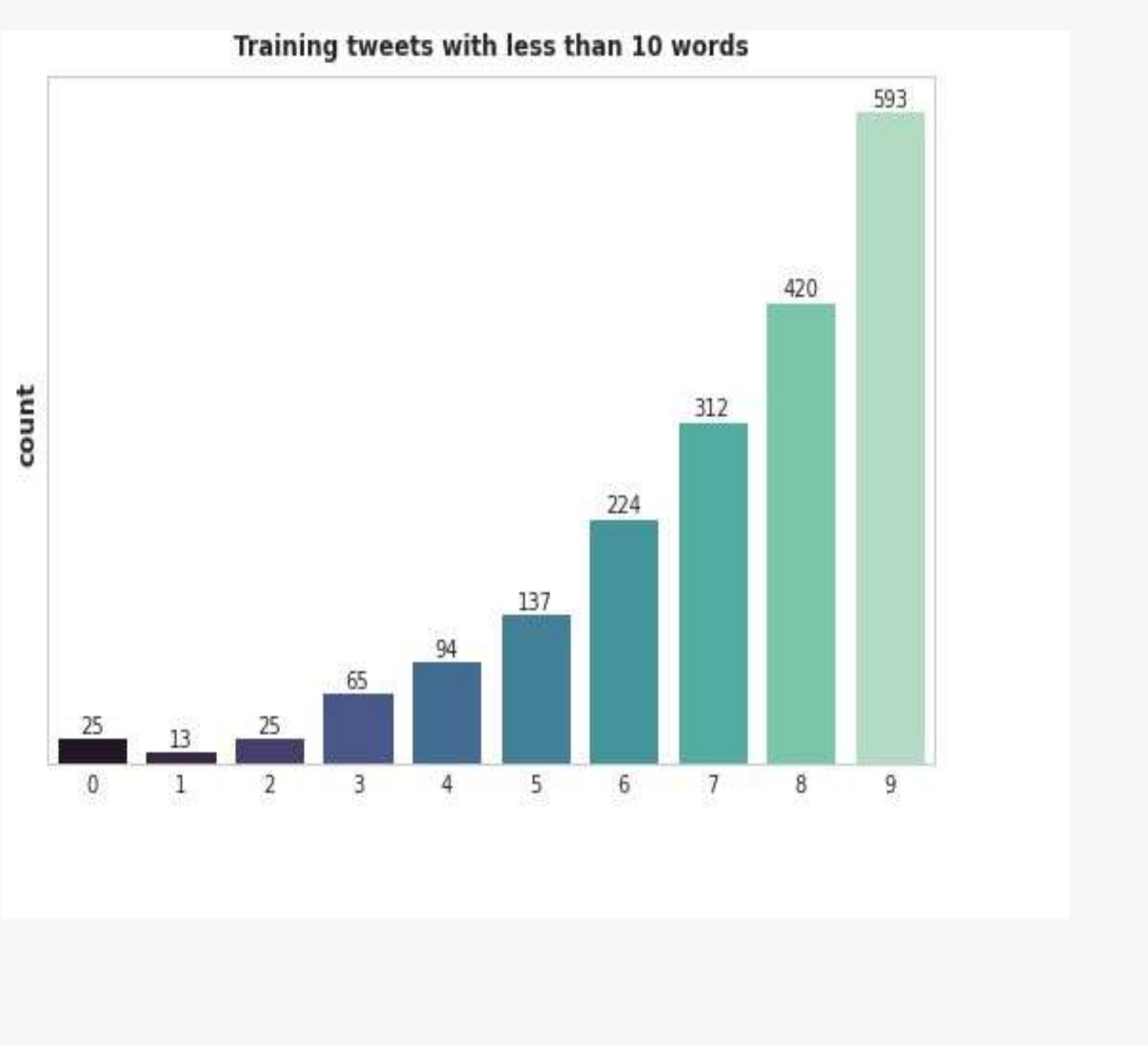

```
#clean hashtags at the end of the sentence, and keep those in the middle of the sentence by removing j
ust the # symbol def clean_hashtags(tweet):
    new_tweet = " ".join(word.strip() for word in re.split('#(?!(?:hashtag)\b)[\w-]+(?=(?:\s+#[\w-]+)*\s
*$)', tweet)) #remove last hashtags
    new_tweet2 = " ".join(word.strip() for word in re.split('#|_', new_tweet)) #remove hashtags symbol
from words in the middle of the sentence     return new_tweet2
```

TWEETS ROBERT CONFUSION:

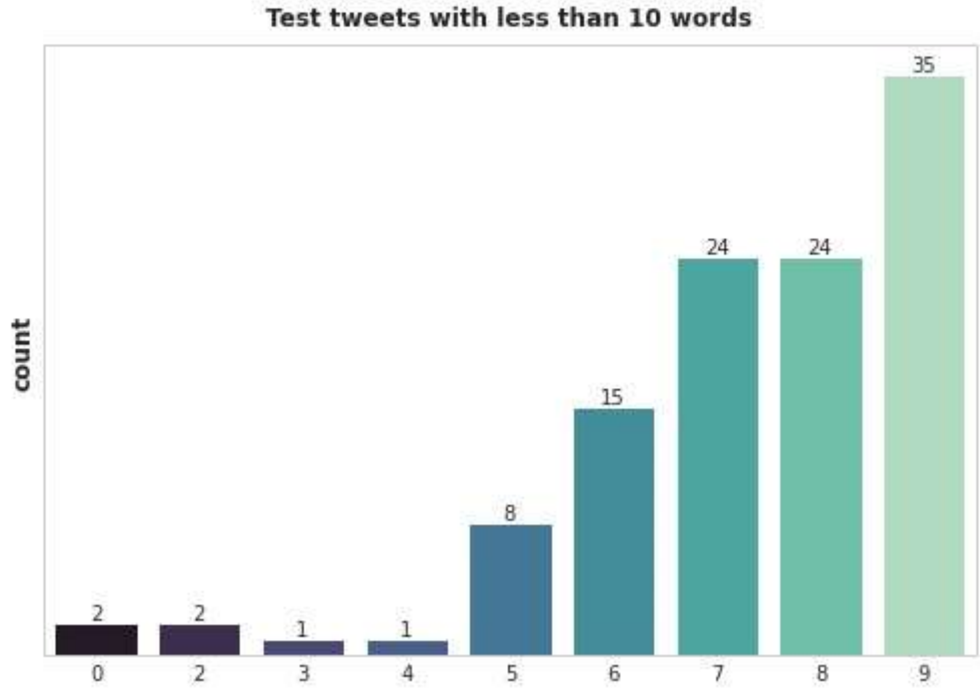
```
#Filter special characters such as & and $ present in some words def
filter_chars(a):
    sent = []     for word in a.split('
'):         if ('$' in word) | ('&' in
word):
            sent.append('')
else:
            sent.append(word)
return ' '.join(sent)

def remove_mult_spaces(text): # remove multiple spaces
return re.sub("\s\s+" , " ", text)
```

```
text_len_test = []
for text in df_test.text_clean:
    tweet_len = len(text.split())
    text_len_test.append(tweet_len)
```





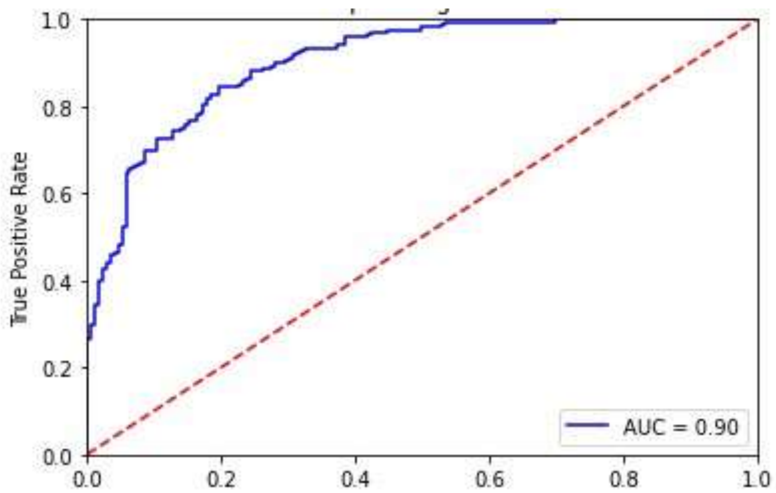

```
plt.figure(figsize=(7,5))
ax = sns.countplot(x='text_len', data=df_test[df_test['text_len']<10], palette='mako') plt.title('Test
tweets with less than 10 words')
plt.yticks([])
ax.bar_label(ax.containers[0])
plt.ylabel('count')
plt.xlabel('') plt.show()
```



SENTIMENT COLUMN ANAYSIS

Positive	11381
Negative	9889
Neutral	7560
Extremely Positive	6618
Extremely Negative	5475

Name: Sentiment, dtype: int64



CONCLUSION:

In this project we tried to show the basic way of classifying tweets into positive or negative category using Naive Bayes as baseline and how language models are related to the Naive Bayes and can produce better results.