Data Glacier

Your Deep Learning Partner

EDA Presentation and proposed modeling technique

Advance NLP : Hate Speech detection using Transformers (Deep Learning)
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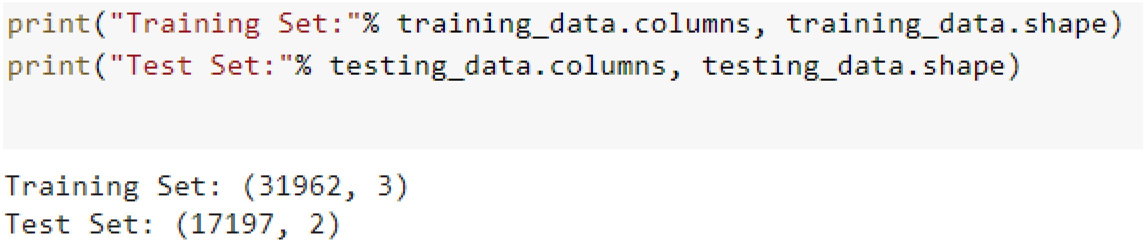
Agenda

EDA Presentation

Proposed Modeling Technique

Checking the Shape of Training and Test Data

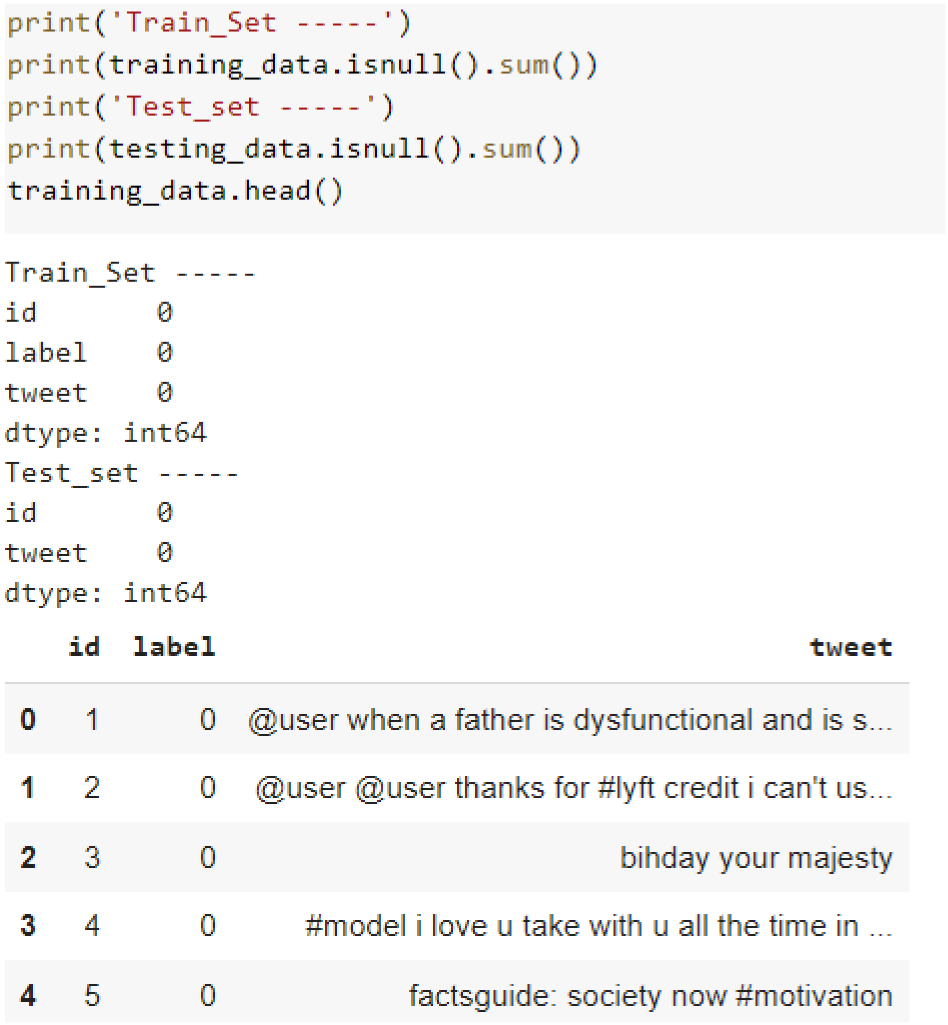


```
print("Training Set:"% training_data.columns, training_data.shape)
print("Test Set:"% testing_data.columns, testing_data.shape)
```

```
Training Set: (31962, 3)
Test Set: (17197, 2)
```

We have 31962 and 17197 tweets in the training and test data set respectively.

Null Data



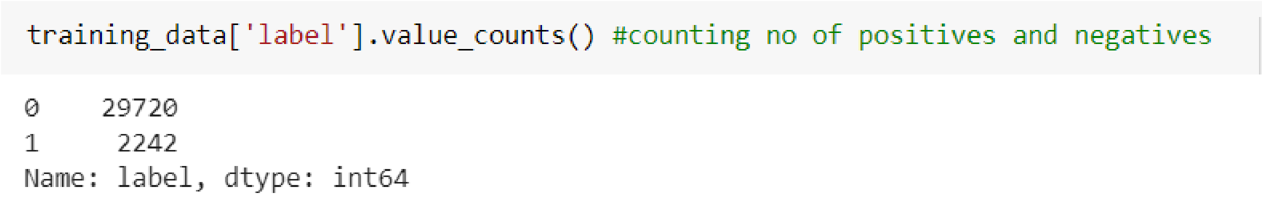
```
print('Train_Set -----')
print(training_data.isnull().sum())
print('Test_set -----')
print(testing_data.isnull().sum())
training_data.head()
```

```
Train_Set -----
id        0
label     0
tweet     0
dtype: int64
Test_set -----
id        0
tweet     0
dtype: int64
```

	id	label	tweet
0	1	0	@user when a father is dysfunctional and is s...
1	2	0	@user @user thanks for #lyft credit i can't us...
2	3	0	bihday your majesty
3	4	0	#model i love u take with u all the time in ...
4	5	0	factsguide: society now #motivation

There are no null data in the datasets.

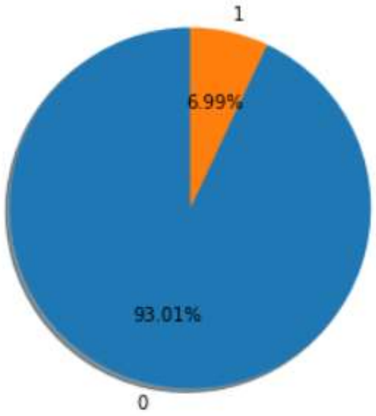
Positive and Negative Tweets

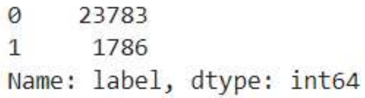


```
training_data['label'].value_counts() #counting no of positives and negatives
```

```
0    29720
1     2242
Name: label, dtype: int64
```

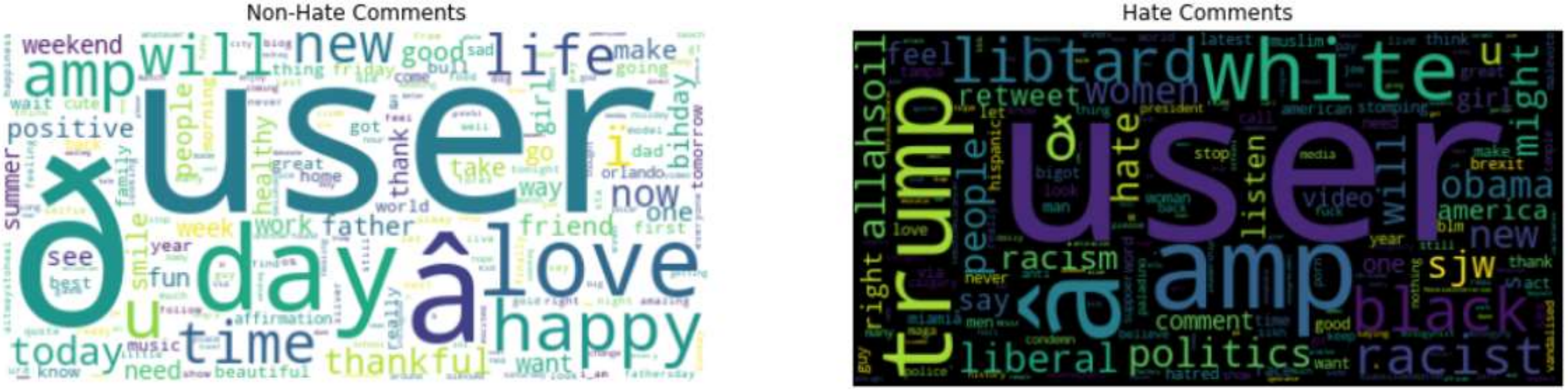
There are 2242 hate speech tweets (represented in yellow color in the given pie chart) in the training data and the rest contains no hate speech.





```
0    23783
1     1786
Name: label, dtype: int64
```

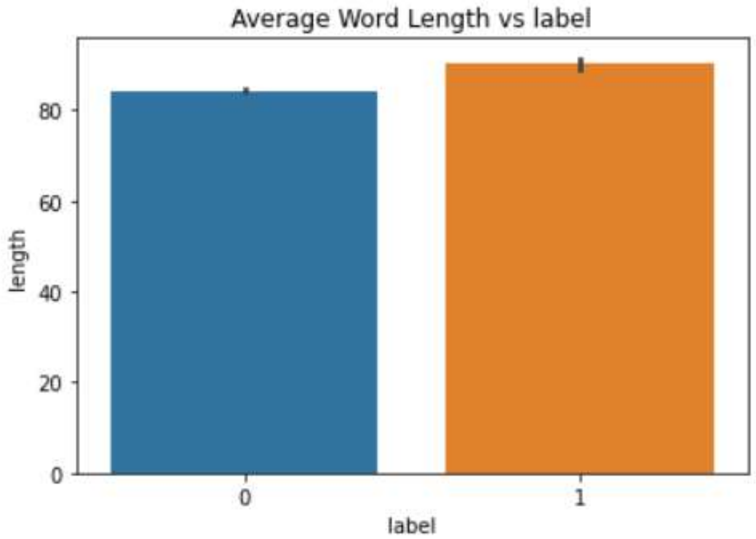
Most Frequent Hate Words


Non-Hate Comments

Hate Comments

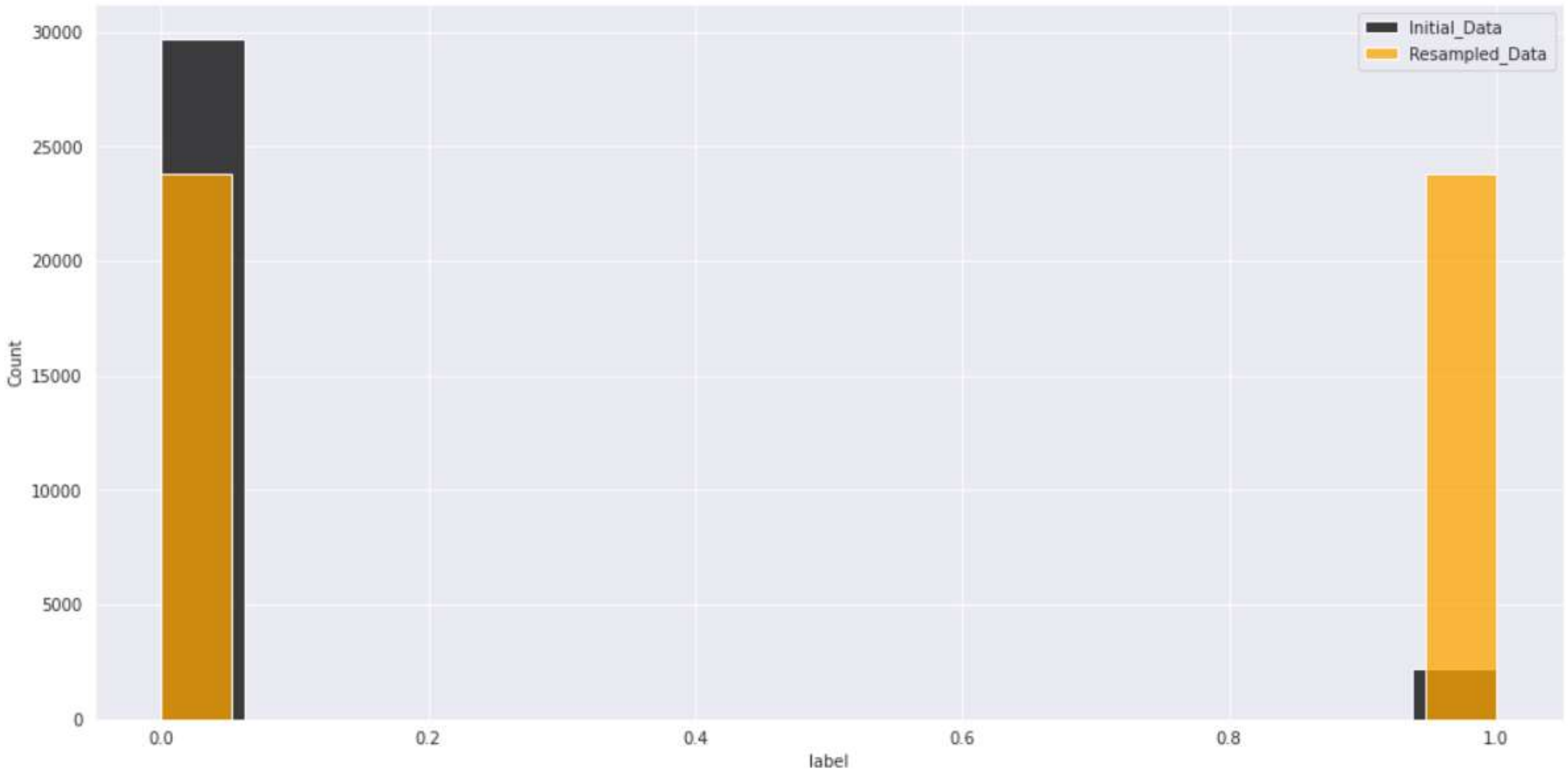
Visual representation of most frequent hate words

Average Word Lengths



Average word lengths for hate speech (orange) and non hate speech (blue) tweets.

Undersampling and Overssampling results



Initial data(black) and after sampling data(orange) for hate and non hate words

Recommended Models

- XGBClassifier
- LogisticRegression
- MultinomialNB
- SGDClassifier
- DecisionTreeClassifier
- RandomForestClassifier
- KNeighborsClassifier
- LinearSVC
- SVC
- BERT
- RoBERTa

Thank You