

## Mood Classification of Song

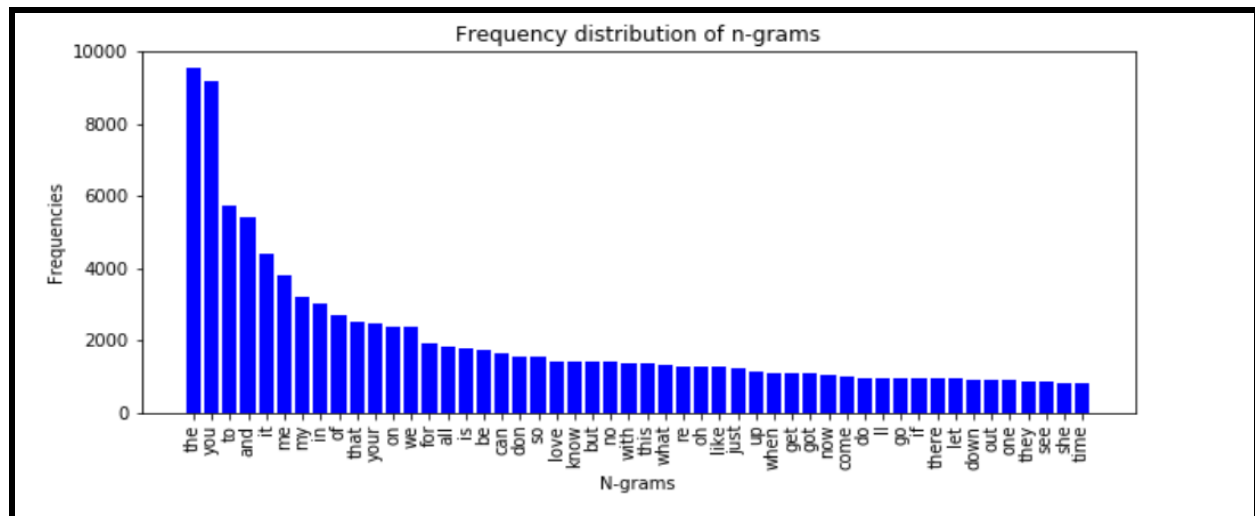
**About K3G Music:** K3G Music enterprises is planning a new music station which would enable listeners to listen to music based on how they feel. They plan to use Machine learning to classify songs. Acknowledging there are new songs added to their catalog daily, they intend to build a machine learning based classifier service which would classify songs as (Happy/Sad).

**Goal:** K3G Music wants to prototype an app which would dynamically generate whether a song is happy/sad from a top-k list in the US.

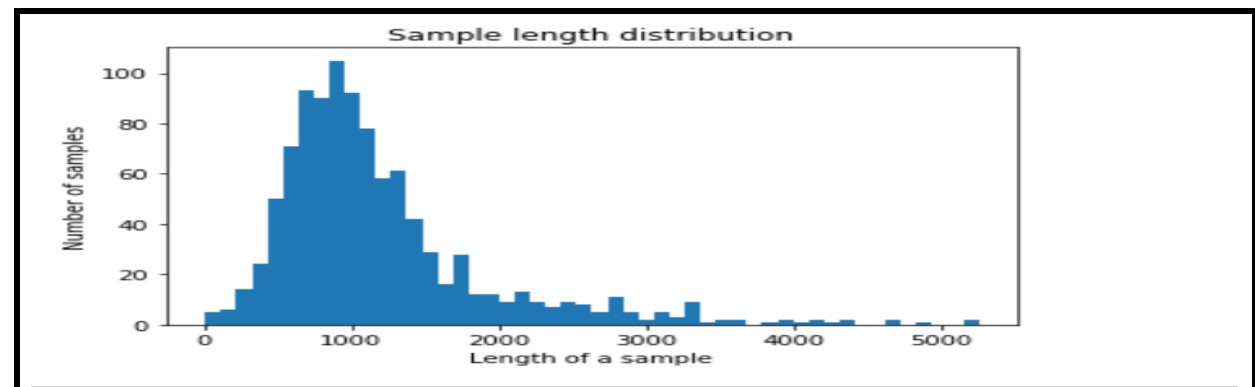
**Approach:** For modelling we have adopted google **multi-layer perceptron model** to classify song as Happy/Sad.

### Exploratory data analysis:

1. Frequency of lyrics' word:



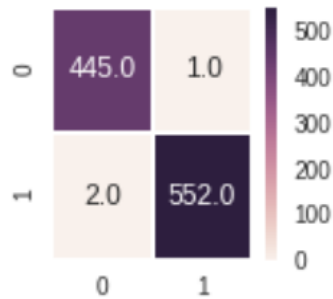
2. Size of sample:



## Matric Calculation: Confusion matrix and F1-score

### 1. Confusion matrix: Training dataset

```
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
f,ax = plt.subplots(figsize=(2, 2))
sns.heatmap(train_cm, annot=True, linewidths=1, fmt= '.1f',ax=ax)
plt.show()
```



Below are the metrics of confusion matrix:

TN= 445.0                  FP=1.0  
FN= 2.0                  TP=552.0

### 2. Confusion matrix: Testing dataset

```
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
f,ax = plt.subplots(figsize=(2, 2))
sns.heatmap(test_cm, annot=True, linewidths=1, fmt= '.1f',ax=ax)
plt.show()
```



Below are the metrics of confusion matrix:

TN= 62.0                  FP=43.0  
FN= 21.0                  TP=74.0

### 3. F1-Score

```
from sklearn.metrics import f1_score
test_f1_score = f1_score(validation_set['mood'], validation_set['predicted_mood'], pos_label='happy')
test_f1_score

0.6595744680851063
```

F1- score for test data is 0.6595744680851063

## How good is your model?

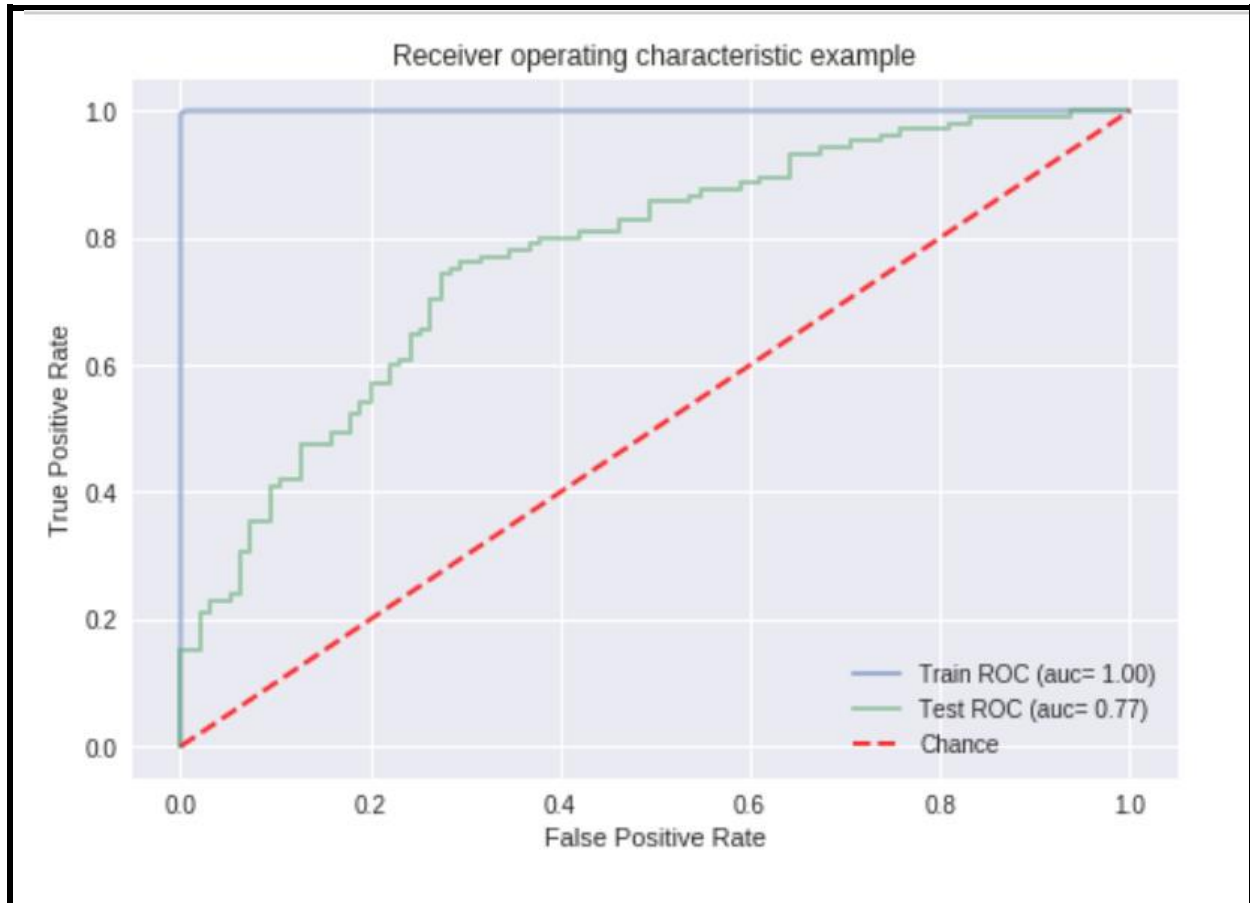
### 1. Test accuracy:

```
import numpy as np
from sklearn.metrics import accuracy_score
test_accuracy = accuracy_score(validation_set['mood'], validation_set['predicted_mood'])
test_accuracy

0.68
```

Accuracy of the model on test data is 0.68

## 2. ROC Curve:



## How to access our model?

We have used flask to deploy the frontend. Also, our application/model can be accessed here: <https://musicmoodapp.herokuapp.com>

Steps to follow:

- At the right end side of page, write song name and artist name in the box provided, something like this, and click on search:

## Get Song Mood

Song Name:

Artist:

Search

- Result would be displayed:


## Get Song Mood

Song Name:

Artist:

Search

Happy



Reference:

1. <https://github.com/rasbt/musicmood>