spam_classification_NaiveBayes

April 24, 2018

```
In [17]: %matplotlib inline
         import pandas as pd
         import numpy as np
         import seaborn as sn
         import matplotlib.pyplot as plt
         from sklearn.naive_bayes import MultinomialNB as MNB
         from sklearn.model_selection import train_test_split
         from sklearn.metrics import accuracy_score,confusion_matrix,classification_report
         from sklearn.feature_extraction.text import CountVectorizer
```

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In [18]: df = pd.read_csv('spam.csv',encoding='latin-1')
         df.head()
```

```
Out[18]:      v1                                                 v2 Unnamed: 2  \
         0   ham  Go until jurong point, crazy.. Available only ...        NaN
         1   ham                      Ok lar... Joking wif u oni...        NaN
         2  spam  Free entry in 2 a wkly comp to win FA Cup fina...        NaN
         3   ham  U dun say so early hor... U c already then say...        NaN
         4   ham  Nah I don't think he goes to usf, he lives aro...        NaN

           Unnamed: 3 Unnamed: 4
         0        NaN        NaN
         1        NaN        NaN
         2        NaN        NaN
         3        NaN        NaN
         4        NaN        NaN
```

```
In [19]: df = df.drop(["Unnamed: 2","Unnamed: 3","Unnamed: 4"],axis=1)
         df = df.rename(columns={'v1':'labels','v2':'texts'})
         df.head()
```

```
Out[19]:   labels                                              texts
         0    ham  Go until jurong point, crazy.. Available only ...
         1    ham                      Ok lar... Joking wif u oni...
         2   spam  Free entry in 2 a wkly comp to win FA Cup fina...
         3    ham  U dun say so early hor... U c already then say...
         4    ham  Nah I don't think he goes to usf, he lives aro...
```

```
In [20]: df['labels'].value_counts()

Out[20]: ham     4825
         spam     747
         Name: labels, dtype: int64

In [21]: df['label_count'] = df['labels'].map({'ham':0,'spam':1})
         df.label_count.head()

Out[21]: 0    0
         1    0
         2    1
         3    0
         4    0
         Name: label_count, dtype: int64

In [22]: train_x,test_x,train_y,test_y = train_test_split(df['texts'],df['label_count'],test_siz
         train_x.shape, test_y.shape

Out[22]: ((4457,), (1115,))

In [23]: vect = CountVectorizer()
         vect.fit(train_x)
         train_x_df = vect.transform(train_x)
         test_x_df = vect.transform(test_x)

In [24]: model = MNB()
         model.fit(train_x_df,train_y)

Out[24]: MultinomialNB(alpha=1.0, class_prior=None, fit_prior=True)

In [25]: predicted= model.predict(test_x_df)

In [26]: model.score(test_x_df,test_y)

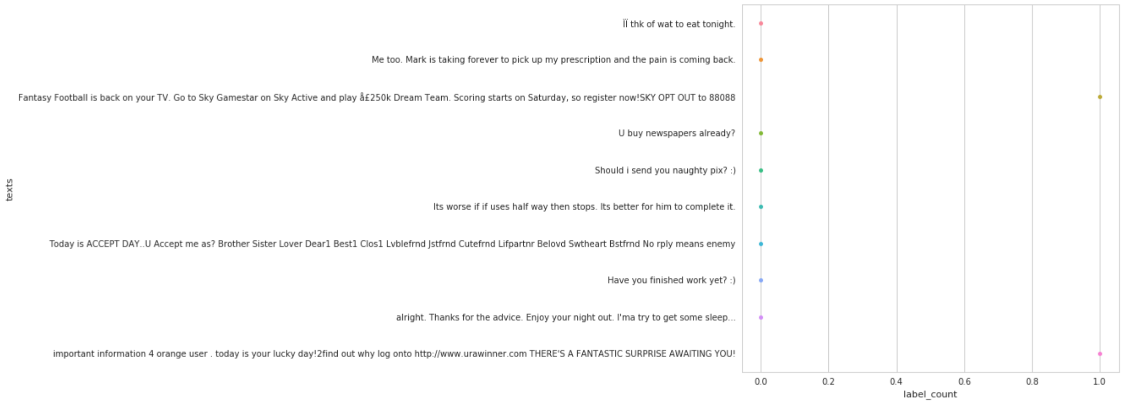
Out[26]: 0.9910313901345291

In [104]: # sn.set_context("paper", rc={"font_scale":1.9, "axes.titlesize":18, "axes.labelsize":

          fig, ax = plt.subplots()
          sn.set_context("talk", font_scale=0.9)
          fig.set_size_inches(8.0, 8.0)

          sn.set(style="whitegrid", color_codes=True)
          sn.stripplot(y=test_x[:10], x=test_y[:10], ax=ax)

Out[104]: <matplotlib.axes._subplots.AxesSubplot at 0x7fc40ef4b410>
```



```
In [ ]: sn.stripplot(y=test_x[:10], x=df[''][:10], jitter=True);
```