

fnd-1

June 27, 2024

```
[ ]: import pandas as pd
import numpy as nm
from sklearn.model_selection import train_test_split as ttp
from sklearn.metrics import classification_report
import re
import string
import matplotlib.pyplot as plt
data_true=pd.read_csv("/content/drive/MyDrive/True.csv")
data_fake=pd.read_csv("/content/drive/MyDrive/Fake.csv")
data_true.head(5)
```

```
[ ]:                                     title \
0  As U.S. budget fight looms, Republicans flip t...
1  U.S. military to accept transgender recruits o...
2  Senior U.S. Republican senator: 'Let Mr. Muell...
3  FBI Russia probe helped by Australian diplomat...
4  Trump wants Postal Service to charge 'much mor...

                                     text      subject \
0  WASHINGTON (Reuters) - The head of a conservat...  politicsNews
1  WASHINGTON (Reuters) - Transgender people will...  politicsNews
2  WASHINGTON (Reuters) - The special counsel inv...  politicsNews
3  WASHINGTON (Reuters) - Trump campaign adviser ...  politicsNews
4  SEATTLE/WASHINGTON (Reuters) - President Donal...  politicsNews

                                     date
0  December 31, 2017
1  December 29, 2017
2  December 31, 2017
3  December 30, 2017
4  December 29, 2017
```

```
[ ]:
```

```
[ ]: data_fake.head(5)
```

```

[ ]:                                     title \
0   Donald Trump Sends Out Embarrassing New Year'...
1   Drunk Bragging Trump Staffer Started Russian ...
2   Sheriff David Clarke Becomes An Internet Joke...
3   Trump Is So Obsessed He Even Has Obama's Name...
4   Pope Francis Just Called Out Donald Trump Dur...

                                     text subject \
0   Donald Trump just couldn t wish all Americans ...   News
1   House Intelligence Committee Chairman Devin Nu...   News
2   On Friday, it was revealed that former Milwauk...   News
3   On Christmas day, Donald Trump announced that ...   News
4   Pope Francis used his annual Christmas Day mes...   News

                                date
0   December 31, 2017
1   December 31, 2017
2   December 30, 2017
3   December 29, 2017
4   December 25, 2017

```

```

[ ]: data_true.shape,data_fake.shape

```

```

[ ]: ((21417, 4), (23481, 4))

```

```

[ ]: data_true["class"]=1
     data_fake["class"]=0

```

```

[ ]: data_true_manual_testing=data_true.tail(10)
     # Drop the last 10 indices from data_true
     data_true.drop(data_true.tail(10).index, inplace=True)

     data_fake_manual_testing=data_fake.tail(10) # Removed extra space at the
     ↪beginning of this line
     # Drop the last 10 indices from data_fake
     data_fake.drop(data_fake.tail(10).index, inplace=True)

     data_manual_testing=pd.
     ↪concat([data_fake_manual_testing,data_true_manual_testing],axis=0)
     data_manual_testing.to_csv("manual_testing.csv") # Removed extra space at the
     ↪beginning of this line
     data_merge=pd.concat([data_true,data_fake],axis=0)
     data_merge.head(10)

```

```

[ ]:                                     title \
0   As U.S. budget fight looms, Republicans flip t...
1   U.S. military to accept transgender recruits o...

```

```

2 Senior U.S. Republican senator: 'Let Mr. Muell...
3 FBI Russia probe helped by Australian diplomat...
4 Trump wants Postal Service to charge 'much mor...
5 White House, Congress prepare for talks on spe...
6 Trump says Russia probe will be fair, but time...
7 Factbox: Trump on Twitter (Dec 29) - Approval ...
8     Trump on Twitter (Dec 28) - Global Warming
9 Alabama official to certify Senator-elect Jone...

```

	text	subject \
0	WASHINGTON (Reuters) - The head of a conservat...	politicsNews
1	WASHINGTON (Reuters) - Transgender people will...	politicsNews
2	WASHINGTON (Reuters) - The special counsel inv...	politicsNews
3	WASHINGTON (Reuters) - Trump campaign adviser ...	politicsNews
4	SEATTLE/WASHINGTON (Reuters) - President Donal...	politicsNews
5	WEST PALM BEACH, Fla./WASHINGTON (Reuters) - T...	politicsNews
6	WEST PALM BEACH, Fla (Reuters) - President Don...	politicsNews
7	The following statements were posted to the ve...	politicsNews
8	The following statements were posted to the ve...	politicsNews
9	WASHINGTON (Reuters) - Alabama Secretary of St...	politicsNews

	date	class
0	December 31, 2017	1
1	December 29, 2017	1
2	December 31, 2017	1
3	December 30, 2017	1
4	December 29, 2017	1
5	December 29, 2017	1
6	December 29, 2017	1
7	December 29, 2017	1
8	December 29, 2017	1
9	December 28, 2017	1

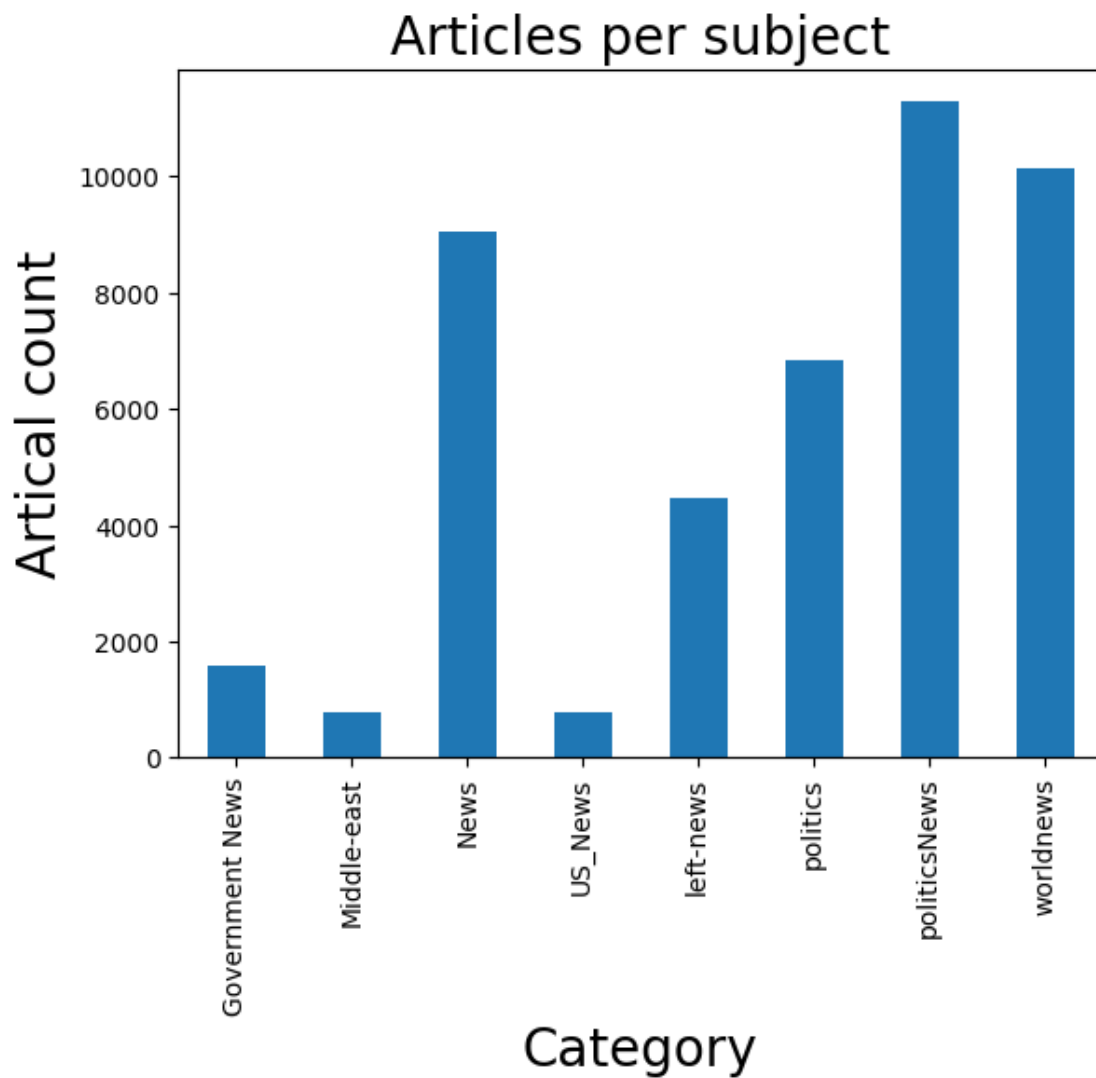
```

[ ]: print(data_merge.groupby(['subject'])['text'].count())
data_merge.groupby(['subject'])['text'].count().plot(kind="bar")
plt.title("Articles per subject",size=20)
plt.xlabel("Category",size=20)
plt.ylabel("Artical count",size=20)
plt.show()

```

subject	
Government News	1570
Middle-east	768
News	9050
US_News	783
left-news	4459
politics	6841

```
politicsNews      11272
worldnews         10135
Name: text, dtype: int64
```

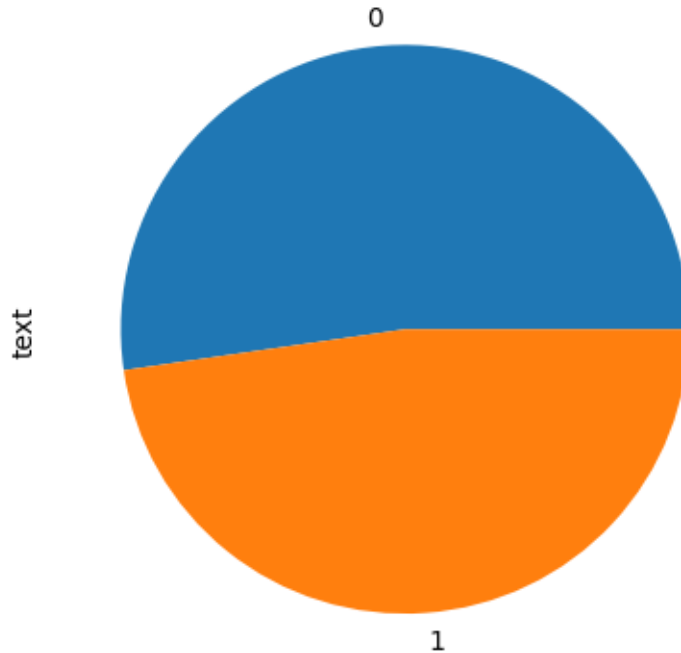


```
[ ]: print(data_merge.groupby(['class'])['text'].count())
      print("0 = Fake News\n1 = True News")
      data_merge.groupby(['class'])['text'].count().plot(kind="pie")
      plt.title("Fake News vs True News",size=20)
      plt.show()
```

```
class
0    23471
1    21407
Name: text, dtype: int64
```

0 = Fake News
1 = True News

Fake News vs True News



```
[ ]:
```

```
[ ]: data=data_merge.drop(["title", "subject", "date"], axis=1)
data.head(10)
```

```
[ ]:
      text  class
0  WASHINGTON (Reuters) - The head of a conservat...    1
1  WASHINGTON (Reuters) - Transgender people will...    1
2  WASHINGTON (Reuters) - The special counsel inv...    1
3  WASHINGTON (Reuters) - Trump campaign adviser ...    1
4  SEATTLE/WASHINGTON (Reuters) - President Donal...    1
5  WEST PALM BEACH, Fla./WASHINGTON (Reuters) - T...    1
6  WEST PALM BEACH, Fla (Reuters) - President Don...    1
7  The following statements were posted to the ve...    1
8  The following statements were posted to the ve...    1
9  WASHINGTON (Reuters) - Alabama Secretary of St...    1
```

```
[ ]: data=data.sample(frac=1)
data.head(10)
```

```
[ ]:                                     text  class
18297  KHARTOUM (Reuters) - Sudan expects the United ...      1
10422  Liberal logic 101 The new superintendent for D...      0
1419   The last two weeks of Donald Trump s presidenc...      0
5244   WASHINGTON (Reuters) - U.S. Attorney General J...      1
13945  CARACAS (Reuters) - Just months ago, with crow...      1
17127  DUBLIN (Reuters) - U.S. President Donald Trump...      1
11632  MOSCOW (Reuters) - Russian military observers ...      1
11245  Many people were wondering why the White House...      0
19004  LONDON (Reuters) - Sufficient progress has not...      1
18479  A Nebraska Democratic Party official has refus...      0
```

```
[ ]: data.isnull().sum()
```

```
[ ]: text      0
      class     0
      dtype: int64
```

```
[ ]: def filtering(data):
      text=data.lower()
      text=re.sub('\[.*?\]', '', text)
      text=re.sub("\W", " ",text)
      text=re.sub('https?://\S+|www\.\S+', '', text)
      text=re.sub('<.*?>+', '', text)
      text=re.sub('[%s]' % re.escape(string.punctuation), '', text)
      text=re.sub('\n', '', text)
      text=re.sub('\w*\d\w*', '', text)
      return text
```

```
[ ]: data['text']=data['text'].apply(filtering)
      data.head(10)
```

```
[ ]:                                     text  class
18297  khartoum  reuters    sudan expects the united ...      1
10422  liberal  logic  the new superintendent for detr...      0
1419   the last two weeks of donald trump s presidenc...      0
5244   washington  reuters    u s attorney general j...      1
13945  caracas  reuters    just months ago  with crow...      1
17127  dublin  reuters    u s president donald trump...      1
11632  moscow  reuters    russian military observers ...      1
11245  many people were wondering why the white house...      0
19004  london  reuters    sufficient progress has not...      1
18479  a nebraska democratic party official has refus...      0
```

```
[ ]: x=data['text']
      y=data['class']
```

```
[ ]: x_train,x_test,y_train,y_test=ttp(x,y,test_size=0.25,random_state=0)
```

```
[ ]: from sklearn.feature_extraction.text import TfidfVectorizer
vectorization = TfidfVectorizer()
xv_train = vectorization.fit_transform(x_train)
xv_test = vectorization.transform(x_test)
```

```
[ ]: from sklearn.linear_model import LogisticRegression
LR = LogisticRegression()
LR.fit(xv_train,y_train)
```

```
[ ]: LogisticRegression()
```

```
[ ]: def predict_news(text):
    text_vectorized = vectorization.transform([filtering(text)])
    prediction = LR.predict(text_vectorized)
    if prediction == 1:
        return "This news is likely true."
    else:
        return "This news is likely fake."
user_input = input("Enter news text: ")
result = predict_news(user_input)
print(result)
```

Enter news text: modi is president
This news is likely fake.

```
[ ]: LogisticRegression()
pred_lr=LR.predict(xv_test)
LR.score(xv_test, y_test)
print(classification_report(y_test,pred_lr))
```

	precision	recall	f1-score	support
0	0.99	0.99	0.99	5918
1	0.98	0.99	0.99	5302
accuracy			0.99	11220
macro avg	0.99	0.99	0.99	11220
weighted avg	0.99	0.99	0.99	11220

```
[ ]: from sklearn.tree import DecisionTreeClassifier
DT = DecisionTreeClassifier()
DT.fit(xv_train, y_train)
DecisionTreeClassifier()
DecisionTreeClassifier()
```

```

DecisionTreeClassifier()
pred_dt = DT.predict(xv_test)
DT.score(xv_test, y_test)
0.996524064171123
print (classification_report(y_test, pred_lr))

```

	precision	recall	f1-score	support
0	0.99	0.99	0.99	5918
1	0.98	0.99	0.99	5302
accuracy			0.99	11220
macro avg	0.99	0.99	0.99	11220
weighted avg	0.99	0.99	0.99	11220

```

[ ]: def predict_news(text):
    text_vectorized = vectorization.transform([filtering(text)])
    prediction = DT.predict(text_vectorized)
    if prediction == 1:
        return "This news is likely true."
    else:
        return "This news is likely fake."
user_input = input("Enter news text: ")
result = predict_news(user_input)
print(result)

```

Enter news text: 4th world war has already happen
This news is likely fake.

```

[ ]: from sklearn.ensemble import RandomForestClassifier
RF = RandomForestClassifier(random_state = 0)
RF.fit(xv_train, y_train)
RandomForestClassifier(random_state=0)
RandomForestClassifier(random_state=0)
RandomForestClassifier(random_state=0)
pred_rf = RF.predict(xv_test)
RF.score(xv_test, y_test)
0.989572192513369
print (classification_report(y_test, pred_rf))

```

	precision	recall	f1-score	support
0	0.99	0.99	0.99	5918
1	0.99	0.99	0.99	5302
accuracy			0.99	11220
macro avg	0.99	0.99	0.99	11220

weighted avg 0.99 0.99 0.99 11220

```
[ ]: def predict_news(text):  
    text_vectorized = vectorization.transform([filtering(text)])  
    prediction = RF.predict(text_vectorized)  
    if prediction == 1:  
        return "This news is likely true."  
    else:  
        return "This news is likely fake."  
user_input = input("Enter news text: ")  
result = predict_news(user_input)  
print(result)
```

Enter news text: abdul kalam still alive
This news is likely fake.