

```
In [1]: import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score
from sklearn.metrics import classification_report
import re
import string
```

```
In [9]: data_fake = pd.read_csv(r"C:\Users\Ananya Kaul\OneDrive\Desktop\Fake.csv")
data_true = pd.read_csv(r"C:\Users\Ananya Kaul\OneDrive\Desktop\True.csv")
```

```
In [10]: data_fake.head()
```

```
Out[10]:
```

	title	text	subject	date
0	Donald Trump Sends Out Embarrassing New Year'...	Donald Trump just couldn t wish all Americans ...	News	December 31, 2017
1	Drunk Bragging Trump Staffer Started Russian ...	House Intelligence Committee Chairman Devin Nu...	News	December 31, 2017
2	Sheriff David Clarke Becomes An Internet Joke...	On Friday, it was revealed that former Milwauk...	News	December 30, 2017
3	Trump Is So Obsessed He Even Has Obama's Name...	On Christmas day, Donald Trump announced that ...	News	December 29, 2017
4	Pope Francis Just Called Out Donald Trump Dur...	Pope Francis used his annual Christmas Day mes...	News	December 25, 2017

```
In [11]: data_true.head()
```

```
Out[11]:
```

	title	text	subject	date
0	As U.S. budget fight looms, Republicans flip t...	WASHINGTON (Reuters) - The head of a conservat...	politicsNews	December 31, 2017
1	U.S. military to accept transgender recruits o...	WASHINGTON (Reuters) - Transgender people will...	politicsNews	December 29, 2017
2	Senior U.S. Republican senator: 'Let Mr. Muell...	WASHINGTON (Reuters) - The special counsel inv...	politicsNews	December 31, 2017
3	FBI Russia probe helped by Australian diplomat...	WASHINGTON (Reuters) - Trump campaign adviser ...	politicsNews	December 30, 2017
4	Trump wants Postal Service to charge 'much mor...	SEATTLE/WASHINGTON (Reuters) - President Donal...	politicsNews	December 29, 2017

```
In [12]: data_fake.tail()
```

```
Out[12]:
```

	title	text	subject	date
23476	McPain: John McCain Furious That Iran Treated ...	21st Century Wire says As 21WIRE reported earl...	Middle-east	January 16, 2016

	title	text	subject	date
23477	JUSTICE? Yahoo Settles E-mail Privacy Class-ac...	21st Century Wire says It s a familiar theme. ...	Middle-east	January 16, 2016
23478	Sunnistan: US and Allied 'Safe Zone' Plan to T...	Patrick Henningsen 21st Century WireRemember ...	Middle-east	January 15, 2016
23479	How to Blow \$700 Million: Al Jazeera America F...	21st Century Wire says Al Jazeera America will...	Middle-east	January 14, 2016
23480	10 U.S. Navy Sailors Held by Iranian Military ...	21st Century Wire says As 21WIRE predicted in ...	Middle-east	January 12, 2016

In [13]: `data_true.tail()`

	title	text	subject	date
21412	'Fully committed' NATO backs new U.S. approach...	BRUSSELS (Reuters) - NATO allies on Tuesday we...	worldnews	August 22, 2017
21413	LexisNexis withdrew two products from Chinese ...	LONDON (Reuters) - LexisNexis, a provider of l...	worldnews	August 22, 2017
21414	Minsk cultural hub becomes haven from authorities	MINSK (Reuters) - In the shadow of disused Sov...	worldnews	August 22, 2017
21415	Vatican upbeat on possibility of Pope Francis ...	MOSCOW (Reuters) - Vatican Secretary of State ...	worldnews	August 22, 2017
21416	Indonesia to buy \$1.14 billion worth of Russia...	JAKARTA (Reuters) - Indonesia will buy 11 Sukh...	worldnews	August 22, 2017

In [14]: `data_fake["class"]=0
data_true["class"]=1`

In [15]: `data_fake.shape, data_true.shape`

Out[15]: `((23481, 5), (21417, 5))`

In [17]: `data_fake_manual_testing =data_fake.tail(10)
for i in range(23480,23470,-1):
 data_fake.drop([i], axis=0, inplace = True)

data_true_manual_testing =data_true.tail(10)
for i in range(21416 ,21406,-1):
 data_true.drop([i], axis =0, inplace = True)`

In [18]: `data_fake.shape, data_true.shape`

Out[18]: `((23471, 5), (21407, 5))`

In [108... `data_fake_manual_testing['class']=0
data_true_manual_testing['class']=1`

A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
data_fake_manual_testing['class']=0
```

C:\Users\ANANYA~1\AppData\Local\Temp\ipykernel_22324\1676563180.py:2: SettingWithCopyWarning:

A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

```
data_true_manual_testing['class']=1
```

In [109...

```
data_fake_manual_testing.head(10)
```

Out[109...

	title	text	subject	date	class
23471	Seven Iranians freed in the prisoner swap have...	21st Century Wire says This week, the historic...	Middle-east	January 20, 2016	0
23472	#Hashtag Hell & The Fake Left	By Dady Chery and Gilbert MercierAll writers ...	Middle-east	January 19, 2016	0
23473	Astroturfing: Journalist Reveals Brainwashing ...	Vic Bishop Waking TimesOur reality is carefull...	Middle-east	January 19, 2016	0
23474	The New American Century: An Era of Fraud	Paul Craig RobertsIn the last years of the 20t...	Middle-east	January 19, 2016	0
23475	Hillary Clinton: 'Israel First' (and no peace ...	Robert Fantina CounterpunchAlthough the United...	Middle-east	January 18, 2016	0
23476	McPain: John McCain Furious That Iran Treated ...	21st Century Wire says As 21WIRE reported earl...	Middle-east	January 16, 2016	0
23477	JUSTICE? Yahoo Settles E-mail Privacy Class-ac...	21st Century Wire says It s a familiar theme. ...	Middle-east	January 16, 2016	0
23478	Sunnistan: US and Allied 'Safe Zone' Plan to T...	Patrick Henningsen 21st Century WireRemember ...	Middle-east	January 15, 2016	0
23479	How to Blow \$700 Million: Al Jazeera America F...	21st Century Wire says Al Jazeera America will...	Middle-east	January 14, 2016	0
23480	10 U.S. Navy Sailors Held by Iranian Military ...	21st Century Wire says As 21WIRE predicted in ...	Middle-east	January 12, 2016	0

In [110...

```
data_true_manual_testing.head(10)
```

Out[110...

	title	text	subject	date	class
21407	Mata Pires, owner of embattled Brazil builder ...	SAO PAULO (Reuters) - Cesar Mata Pires, the ow...	worldnews	August 22, 2017	1
21408	U.S., North Korea clash at U.N. forum over nuc...	GENEVA (Reuters) - North Korea and the United ...	worldnews	August 22, 2017	1
21409	U.S., North Korea clash at U.N. arms forum on ...	GENEVA (Reuters) - North Korea and the United ...	worldnews	August 22, 2017	1
21410	Headless torso could belong	COPENHAGEN (Reuters) - Danish	worldnews	August 22,	1

	title	text	subject	date	class
	to submarine journ...	police said on T...		2017	
21411	North Korea shipments to Syria chemical arms a...	UNITED NATIONS (Reuters) - Two North Korean sh...	worldnews	August 21, 2017	1
21412	'Fully committed' NATO backs new U.S. approach...	BRUSSELS (Reuters) - NATO allies on Tuesday we...	worldnews	August 22, 2017	1
21413	LexisNexis withdrew two products from Chinese ...	LONDON (Reuters) - LexisNexis, a provider of l...	worldnews	August 22, 2017	1
21414	Minsk cultural hub becomes haven from authorities	MINSK (Reuters) - In the shadow of disused Sov...	worldnews	August 22, 2017	1
21415	Vatican upbeat on possibility of Pope Francis ...	MOSCOW (Reuters) - Vatican Secretary of State ...	worldnews	August 22, 2017	1
21416	Indonesia to buy \$1.14 billion worth of Russia...	JAKARTA (Reuters) - Indonesia will buy 11 Sukh...	worldnews	August 22, 2017	1

In [111...

```
data_merge = pd.concat([data_fake, data_true], axis=0 )
data_merge.head(10)
```

Out[111...

	title	text	subject	date	class
0	Donald Trump Sends Out Embarrassing New Year'...	Donald Trump just couldn t wish all Americans ...	News	December 31, 2017	0
1	Drunk Bragging Trump Staffer Started Russian ...	House Intelligence Committee Chairman Devin Nu...	News	December 31, 2017	0
2	Sheriff David Clarke Becomes An Internet Joke...	On Friday, it was revealed that former Milwauk...	News	December 30, 2017	0
3	Trump Is So Obsessed He Even Has Obama's Name...	On Christmas day, Donald Trump announced that ...	News	December 29, 2017	0
4	Pope Francis Just Called Out Donald Trump Dur...	Pope Francis used his annual Christmas Day mes...	News	December 25, 2017	0
5	Racist Alabama Cops Brutalize Black Boy While...	The number of cases of cops brutalizing and ki...	News	December 25, 2017	0
6	Fresh Off The Golf Course, Trump Lashes Out A...	Donald Trump spent a good portion of his day a...	News	December 23, 2017	0
7	Trump Said Some INSANELY Racist Stuff Inside ...	In the wake of yet another court decision that...	News	December 23, 2017	0
8	Former CIA Director Slams Trump Over UN Bully...	Many people have raised the alarm regarding th...	News	December 22, 2017	0
9	WATCH: Brand-New Pro-Trump Ad Features So Muc...	Just when you might have thought we d get a br...	News	December 21, 2017	0

In [112...

```
data_merge.columns
```

Out[112...

```
Index(['title', 'text', 'subject', 'date', 'class'], dtype='object')
```

In [113...

```
data = data_merge.drop(['title','subject','date'], axis =1)
```

In [114... `data.isnull().sum()`

Out[114...
`text` 0
`class` 0
`dtype: int64`

In [115... `data = data.sample(frac=1)`

In [116... `data.head()`

Out[116...

	text	class
1684	WASHINGTON (Reuters) - Democratic leaders in t...	1
15045	ISTANBUL (Reuters) - Turkey has dismissed what...	1
10056	Nancy Pelosi just flunked Constitutional Law! ...	0
4900	Donald Trump, besides being a classic narcissi...	0
6648	WEST PALM BEACH, Fla. (Reuters) - President-el...	1

In [117... `data.reset_index(inplace= True)`
`data.drop(['index'], axis=1, inplace=True)`

In [118... `data.columns`

Out[118... `Index(['text', 'class'], dtype='object')`

In [119... `data.head()`

Out[119...

	text	class
0	WASHINGTON (Reuters) - Democratic leaders in t...	1
1	ISTANBUL (Reuters) - Turkey has dismissed what...	1
2	Nancy Pelosi just flunked Constitutional Law! ...	0
3	Donald Trump, besides being a classic narcissi...	0
4	WEST PALM BEACH, Fla. (Reuters) - President-el...	1

In [120...

```
def wordopt(text):  
    text= text.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
```

In [121... `data['text']= data['text'].apply(wordopt)`

In [122...

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

In [123...

```
x_train, x_test , y_train, y_test = train_test_split(x,y,test_size=0.25)
```

In [124...

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

In [125...

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

Out[125...

```
LogisticRegression()
```

In [126...

```
pred_lr = LR.predict(xv_test)
```

In [127...

```
LR.score(xv_test, y_test)
```

Out[127...

```
0.9859180035650624
```

In [128...

```
print(classification_report(y_test, pred_lr))
```

	precision	recall	f1-score	support
0	0.99	0.99	0.99	5940
1	0.98	0.99	0.99	5280
accuracy			0.99	11220
macro avg	0.99	0.99	0.99	11220
weighted avg	0.99	0.99	0.99	11220

In [129...

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

Out[129...

```
DecisionTreeClassifier()
```

In [130...

```
pred_dt= DT.predict(xv_test)
```

In [134...

```
DT.score(xv_test, y_test)
```

Out[134...

```
0.9952762923351158
```

In [135...

```
print(classification_report(y_test, pred_dt))
```

	precision	recall	f1-score	support
0	0.99	1.00	1.00	5940
1	1.00	0.99	0.99	5280
accuracy			1.00	11220
macro avg	1.00	1.00	1.00	11220
weighted avg	1.00	1.00	1.00	11220

```
In [139... from sklearn.ensemble import GradientBoostingClassifier
GB= GradientBoostingClassifier(random_state= 0)
GB.fit(xv_train, y_train)
```

```
Out[139... GradientBoostingClassifier(random_state=0)
```

```
In [140... pred_gb=GB.predict(xv_test)
```

```
In [141... GB.score(xv_test, y_test)
```

```
Out[141... 0.9942067736185384
```

```
In [142... print(classification_report(y_test, pred_gb))
```

	precision	recall	f1-score	support
0	1.00	0.99	0.99	5940
1	0.99	1.00	0.99	5280
accuracy			0.99	11220
macro avg	0.99	0.99	0.99	11220
weighted avg	0.99	0.99	0.99	11220

```
In [143... from sklearn.ensemble import RandomForestClassifier
RF= RandomForestClassifier(random_state= 0)
RF.fit(xv_train, y_train)
```

```
Out[143... RandomForestClassifier(random_state=0)
```

```
In [144... pred_rf=RF.predict(xv_test)
```

```
In [145... RF.score(xv_test, y_test)
```

```
Out[145... 0.9914438502673797
```

```
In [146... print(classification_report(y_test, pred_rf))
```

	precision	recall	f1-score	support
0	0.99	0.99	0.99	5940
1	0.99	0.99	0.99	5280

accuracy			0.99	11220
macro avg	0.99	0.99	0.99	11220
weighted avg	0.99	0.99	0.99	11220

In [156...

```
def output_label(n):
    if n== 0:
        return "Fake News"
    elif n ==1:
        return "Not a Fake News"

def manual_testing(news):
    testing_news={"text":[news]}
    new_def_test=pd.DataFrame(testing_news)
    new_def_test["text"]=new_def_test["text"].apply(wordopt)
    new_x_test= new_def_test["text"]
    new_xv_test= vectorization.transform(new_x_test)
    pred_LR=LR.predict(new_xv_test)
    pred_DT=DT.predict(new_xv_test)
    pred_GB=GB.predict(new_xv_test)
    pred_RF=RF.predict(new_xv_test)

    return print("\n\nLR Prediction: {} \nDT Prediction: {} \nGB Prediction: {} \nR
```

In [167...

```
news= str(input())
manual_testing(news)
```

People from all walks of life congregated at Bahanaga in Odisha's Balasore district on Sunday, the 10th day of the train accident, to pray for the speedy recovery of the injured and 'Mukti' (salvation) of 288 who lost their lives in the June 2 crash. A part from villagers, people who retrieved the bodies and rescued the injured from the ill-fated Coromandel Express and Bengaluru-Howrah trains performed "mundan" (head tonsuring) as per Hindu death rituals. Social and cultural activists and members of spiritual organisations also participated in the memorial service being held for three days near the premises of Bahanaga High School, where bodies were kept before being shifted to Bhubaneswar.

```
LR Prediction: Fake News
DT Prediction: Fake News
GB Prediction: Fake News
RF Prediction: Fake News
```

In [163...

```
news= str(input())
manual_testing(news)
```

In 2016, a story circulated that Pope Francis made an unprecedented and shocking endorsement of Donald Trump for president.

```
LR Prediction: Fake News
DT Prediction: Fake News
GB Prediction: Fake News
RF Prediction: Fake News
```