

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

```
In [3]: data_true=pd.read_csv('True_News.csv')
data_fake=pd.read_csv('Fake_News.csv')
```

```
In [6]: data_true.head()
```

Out[6]:

		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 [7]: data_fake.tail()
```

Out[7]:

		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	
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 [8]: data_true['class']=1
data_fake["class"]=0
```

```
In [9]: data_true.shape, data_fake.shape
```

Out[9]: ((21417, 5), (23481, 5))

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

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

```
In [11]: data_true.shape, data_fake.shape
```

Out[11]: ((21407, 5), (23471, 5))

```
In [15]: data_fake_manual_testing.tail(10)
```

Out[15]:

	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 [16]: data_true_manual_testing.tail(10)
```

Out[16]:

	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 to submarine journ...	COPENHAGEN (Reuters) - Danish police said on T...	worldnews	August 22, 2017	1
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 [18]: data_merge=pd.concat([data_fake, data_true], axis = 0)
data_merge.tail(10)
```

Out[18]:

	title	text	subject	date	class
21397	Germany's Schulz says he would demand U.S. wit...	BERLIN (Reuters) - The leader of Germany s Soc...	worldnews	August 23, 2017	1
21398	Blunt instrument? What a list of banned articl...	SHANGHAI (Reuters) - An old review of an acade...	worldnews	August 23, 2017	1
21399	Saudi police release teenager detained for dan...	DUBAI (Reuters) - A 14-year-old boy who was de...	worldnews	August 22, 2017	1
21400	The People's Princess, Britons work to keep me...	LONDON (Reuters) - Abdul Daoud spilt most of t...	worldnews	August 23, 2017	1
21401	Argentina labor unions protest job losses, Mac...	BUENOS AIRES (Reuters) - Argentina s main labo...	worldnews	August 22, 2017	1
21402	Exclusive: Trump's Afghan decision may increas...	ON BOARD A U.S. MILITARY AIRCRAFT (Reuters) - ...	worldnews	August 22, 2017	1
21403	U.S. puts more pressure on Pakistan to help wi...	WASHINGTON (Reuters) - The United States sugge...	worldnews	August 21, 2017	1
21404	Exclusive: U.S. to withhold up to \$290 million...	WASHINGTON (Reuters) - The United States has d...	worldnews	August 22, 2017	1
21405	Trump talks tough on Pakistan's 'terrorist' ha...	ISLAMABAD (Reuters) - Outlining a new strategy...	worldnews	August 22, 2017	1
21406	U.S., North Korea clash at U.N. forum over nuc...	GENEVA (Reuters) - North Korea and the United ...	worldnews	August 22, 2017	1

```
In [19]: data_merge.columns
```

Out[19]: Index(['title', 'text', 'subject', 'date', 'class'], dtype='object')

```
In [20]: data=data_merge.drop(['title','subject','date'], axis = 1)
```

```
In [21]: #count of missing values in the dataset
data.isnull().sum()
```

Out[21]: text 0
class 0
dtype: int64

```
In [22]: #randomly suffering the dataframes
data = data.sample(frac = 1)
```

In [23]: `data.tail()`

Out[23]:

	text	class
9704	WASHINGTON (Reuters) - Democratic presidential...	1
18317	During a Friday interview, Virginia Rep. Dave ...	0
144	When we talk about getting rid of Trump, we al...	0
9060	We took a very hard look at these numbers, an...	0
17222	The state of Oregon is hoping to get 5,000 v...	0

In [24]: `data.reset_index(inplace = True)`
`data.drop(['index'], axis = 1, inplace = True)`

In [25]: `data.columns`

Out[25]: Index(['text', 'class'], dtype='object')

In [26]: `data.tail()`

Out[26]:

	text	class
44873	WASHINGTON (Reuters) - Democratic presidential...	1
44874	During a Friday interview, Virginia Rep. Dave ...	0
44875	When we talk about getting rid of Trump, we al...	0
44876	We took a very hard look at these numbers, an...	0
44877	The state of Oregon is hoping to get 5,000 v...	0

In [27]: `#convert the text in lowercase, remmove the extra space, special character, url, and the links.`

```
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('\w*\d\w*', '', text)
    return text
```

In [28]: `data['text'] = data['text'].apply(wordopt)`

In [29]: `#defining dependent and the independent variable.`

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

In [30]: `#Training the model -> splitting into the training and testing set`

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

In [31]: `#convert text to vectors`

```
from sklearn.feature_extraction.text import TfidfVectorizer

vectorization = TfidfVectorizer()
xv_train = vectorization.fit_transform(x_train)
xv_test = vectorization.transform(x_test)
```

In [33]: `#Logistic Regression`

```
from sklearn.linear_model import LogisticRegression
```

In [34]: `LR = LogisticRegression()`
`LR.fit(xv_train, y_train)`

Out[34]:

```
LogisticRegression
LogisticRegression()
```

```
In [35]: > pred_lr = LR.predict(xv_test)
```

```
In [36]: > LR.score(xv_test, y_test)
```

```
Out[36]: 0.9860071301247771
```

```
In [37]: > print(classification_report(y_test, pred_lr))
```

	precision	recall	f1-score	support
0	0.99	0.99	0.99	5856
1	0.98	0.99	0.99	5364
accuracy			0.99	11220
macro avg	0.99	0.99	0.99	11220
weighted avg	0.99	0.99	0.99	11220

```
In [39]: > #Decision Tree Classifier
> from sklearn.tree import DecisionTreeClassifier

DT = DecisionTreeClassifier()
DT.fit(xv_train, y_train)
```

```
Out[39]: > DecisionTreeClassifier
> DecisionTreeClassifier()
```

```
In [40]: > pred_dt = DT.predict(xv_test)
```

```
In [41]: > DT.score(xv_test, y_test)
```

```
Out[41]: 0.9951871657754011
```

```
In [42]: > print(classification_report(y_test, pred_lr))
```

	precision	recall	f1-score	support
0	0.99	0.99	0.99	5856
1	0.98	0.99	0.99	5364
accuracy			0.99	11220
macro avg	0.99	0.99	0.99	11220
weighted avg	0.99	0.99	0.99	11220

```
In [44]: > #Gradient Boost Classifier
> from sklearn.ensemble import GradientBoostingClassifier

GB = GradientBoostingClassifier(random_state = 0)
GB.fit(xv_train, y_train)
```

```
Out[44]: > GradientBoostingClassifier
> GradientBoostingClassifier(random_state=0)
```

```
In [45]: > pred_gb = GB.predict(xv_test)
```

```
In [46]: > GB.score(xv_test, y_test)
```

```
Out[46]: 0.995632798573975
```

```
In [47]: > print(classification_report(y_test, pred_gb))
```

	precision	recall	f1-score	support
0	1.00	0.99	1.00	5856
1	0.99	1.00	1.00	5364
accuracy			1.00	11220
macro avg	1.00	1.00	1.00	11220
weighted avg	1.00	1.00	1.00	11220

```
In [48]: #Random Forest Classifier

from sklearn.ensemble import RandomForestClassifier

RF = RandomForestClassifier(random_state = 0)
RF.fit(xv_train, y_train)
```

```
Out[48]: RandomForestClassifier
RandomForestClassifier(random_state=0)
```

```
In [49]: pred_rf = RF.predict(xv_test)
```

```
In [50]: RF.score(xv_test, y_test)
```

```
Out[50]: 0.990463458110517
```

```
In [51]: print (classification_report(y_test, pred_rf))
```

	precision	recall	f1-score	support
0	0.99	0.99	0.99	5856
1	0.99	0.99	0.99	5364
accuracy			0.99	11220
macro avg	0.99	0.99	0.99	11220
weighted avg	0.99	0.99	0.99	11220

```
In [54]: #Testing the Model
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: {} \nGBC Prediction: {} \nRFC Prediction:{}".format(output_label(pr
                                                                    output_label(pre
                                                                    output_label(pre
                                                                    output_label(pre
```

```
In [55]: #Model Testing With Manual Entry
news = str(input())
manual_testing(news)
```

Federal health officials told the AP they have not received any reports of Ebola cases at the Nevada event. A screenshot of a supposed post from the Centers for Disease Control and Prevention confirming such cases was fabricated. And there is no record of a national emergency being declared. The claims emerged after summer storm left muddy roads flooded, stranding tens of thousands of partygoers; event organizers let traffic flow out of the main road Monday afternoon. "So it was announced earlier that Burning Man was declared a national emergency because it was flooded, and so they sent in FEMA," a woman claims in a TikTok video shared on Instagram, suggesting the development was suspicious. The AP found no record, including on federal websites and in White House announcements, of a national emergency declaration and FEMA confirmed that it was not involved in the situation. "No FEMA personnel or assets have been deployed to the Burning Man festival and there are no requests from local or state authorities for our assistance," FEMA spokesperson Jeremy Edwards said in an email. The TikTok video, like other posts, goes on to relay baseless rumors of reported cases of Ebola, whose occasional outbreaks in humans primarily occur in Africa, at the festival. Some posts also shared an image made to appear that the CDC confirmed the supposed outbreak on X, the platform formerly known as Twitter. The purported X post from the agency reads, "Ebola outbreak confirmed at Black Rock City, NV. It is recommended that all Burning Man attendees remain in their dwellings until further notice. Current State of Emergency in progress." But the CDC's X account published no such post. "CDC has not received any reports of Ebola at the Burning Man Festival and has not issued any warnings or had any requests for assistance from the state and local health departments either," agency spokesperson Scott Pauley said in an email. Reverse image searches further show that a graphic about Ebola used in the fictitious CDC post was published by the agency in 2016, but elements of it were changed. For example, the original graphic asks, "Recently in West Africa?" But the version used in the made-up X post asks, "Recently in Nevada?" Referring more online rumors, Pauley also noted the CDC had not received reports of mpox, formerly known as monkeypox, or Marburg, a rare but severe hemorrhagic fever, in relation to Burning Man. A representative for the Burning Man Project organization also refuted the online claims. "Quite simply, the online rumors of transmissible illnesses in Black Rock City are unfounded and untrue," Dominique Debuquoy-Dodley said in an email. The festival had been closed to vehicles after more than a half-inch (1.3 centimeters) of rain fell Sept. 1, causing flooding and foot-deep mud, as the AP reported. The annual gathering, which launched on a San Francisco beach in 1986, attracts nearly 80,000 artists, musicians and activists for a mix of wilderness camping and avant-garde performances.

```
LR Prediction: Fake News
DT Prediction: Fake News
GBC Prediction: Fake News
RFC Prediction: Fake News
```

```
In [56]: news=str(input())
manual_testing(news)
```

MOSCOW (Reuters) - Russia's former ambassador to Washington, Sergei Kislyak, said on Saturday his conversations with former White House national security adviser Michael Flynn had been transparent and focused on matters of U.S.-Russia cooperation. Kislyak ended his tenure in Washington in July but remains a key figure in ongoing U.S. investigations into Moscow's alleged meddling in the 2016 presidential election. Flynn was forced to resign in February after it became known that he had failed to disclose the content of conversations he had with Kislyak and misled U.S. Vice-President Mike Pence about their meetings. "We only spoke about the most simple things ... but the communication was completely correct, calm, absolutely transparent. In any case, there were no secrets on our side," Kislyak said during a panel discussion on Russian television. "There are a number of issues which are important for cooperation between Russia and the United States - most of all, terrorism. And that was one of the things we discussed."

```
LR Prediction: Not A Fake News
DT Prediction: Not A Fake News
GBC Prediction: Not A Fake News
RFC Prediction: Not A Fake News
```

```
In [ ]: 
```