

Importing Libraries

```
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
```

Importing Dataset

```
In [2]: df_fake = pd.read_csv("../input/fake-news-detection/Fake.csv")
df_true = pd.read_csv("../input/fake-news-detection/True.csv")
```

```
In [3]: df_fake.head()
```

Out[3]:

| | 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 [4]: df_true.head(5)
```

Out[4]:

| | 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 |

Inserting a column "class" as target feature

In [5]:

```
df_fake["class"] = 0
df_true["class"] = 1
```

In [6]:

```
df_fake.shape, df_true.shape
```

Out[6]:

```
((23481, 5), (21417, 5))
```

In [7]:

```
# Removing last 10 rows for manual testing
df_fake_manual_testing = df_fake.tail(10)
for i in range(23480, 23470, -1):
    df_fake.drop([i], axis = 0, inplace = True)

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

In [8]:

```
df_fake.shape, df_true.shape
```

Out[8]:

```
((23471, 5), (21407, 5))
```

In [9]:

```
df_fake_manual_testing["class"] = 0
df_true_manual_testing["class"] = 1
```

```
/opt/conda/lib/python3.7/site-packages/ipykernel_launcher.py:1: 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

```
"""Entry point for launching an IPython kernel.
```

```
/opt/conda/lib/python3.7/site-packages/ipykernel_launcher.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

In [10]:

```
df_fake_manual_testing.head(10)
```

Out[10]:

| | 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 [11]:

```
df_true_manual_testing.head(10)
```

Out[11]:

| | 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 [12]:

```
df_manual_testing = pd.concat([df_fake_manual_testing,df_true_manual_testing], axis = 0)
df_manual_testing.to_csv("manual_testing.csv")
```

Merging True and Fake Dataframes

In [13]:

```
df_merge = pd.concat([df_fake, df_true], axis =0 )
df_merge.head(10)
```

Out[13]:

| | 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 [14]:

```
df_merge.columns
```

Out[14]:

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

Removing columns which are not required

In [15]:

```
df = df_merge.drop(["title", "subject", "date"], axis = 1)
```

In [16]:

```
df.isnull().sum()
```

Out[16]:

```
text      0
class     0
dtype: int64
```

Random Shuffling the dataframe

In [17]:

```
df = df.sample(frac = 1)
```

In [18]:

```
df.head()
```

Out[18]:

| | text | class |
|-------|---|-------|
| 5099 | During a live CNN interview with Rudy Giuliani... | 0 |
| 1345 | ANKARA (Reuters) - Turkey urged the United Sta... | 1 |
| 20864 | The attitudes of the family members defending ... | 0 |
| 971 | WASHINGTON (Reuters) - Charges brought against... | 1 |
| 21217 | The jurors in the Freddie Gray case were deadl... | 0 |

In [19]:

```
df.reset_index(inplace = True)
df.drop(["index"], axis = 1, inplace = True)
```

In [20]:

```
df.columns
```

Out[20]:

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

In [21]:

```
df.head()
```

Out[21]:

| | text | class |
|---|---|-------|
| 0 | During a live CNN interview with Rudy Giuliani... | 0 |
| 1 | ANKARA (Reuters) - Turkey urged the United Sta... | 1 |
| 2 | The attitudes of the family members defending ... | 0 |
| 3 | WASHINGTON (Reuters) - Charges brought against... | 1 |
| 4 | The jurors in the Freddie Gray case were deadl... | 0 |

Creating a function to process the texts

In [22]:

```
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 [23]:

```
df["text"] = df["text"].apply(wordopt)
```

Defining dependent and independent variables

In [24]:

```
x = df["text"]
y = df["class"]
```

Splitting Training and Testing

In [25]:

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

Convert text to vectors

```
In [26]: from sklearn.feature_extraction.text import TfidfVectorizer

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

Logistic Regression

```
In [27]: from sklearn.linear_model import LogisticRegression

LR = LogisticRegression()
LR.fit(xv_train, y_train)
```

```
Out[27]: LogisticRegression()
```

```
In [28]: pred_lr=LR.predict(xv_test)
```

```
In [29]: LR.score(xv_test, y_test)
```

```
Out[29]: 0.9885026737967915
```

```
In [30]: print(classification_report(y_test, pred_lr))
```

| | precision | recall | f1-score | support |
|--------------|-----------|--------|----------|---------|
| 0 | 0.99 | 0.99 | 0.99 | 5853 |
| 1 | 0.99 | 0.99 | 0.99 | 5367 |
| accuracy | | | 0.99 | 11220 |
| macro avg | 0.99 | 0.99 | 0.99 | 11220 |
| weighted avg | 0.99 | 0.99 | 0.99 | 11220 |

Decision Tree Classification

```
In [31]: from sklearn.tree import DecisionTreeClassifier

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

```
Out[31]: DecisionTreeClassifier()
```

```
In [32]: pred_dt = DT.predict(xv_test)
```

```
In [33]: DT.score(xv_test, y_test)
```

```
Out[33]: 0.996524064171123
```

```
In [34]: print(classification_report(y_test, pred_dt))
```

| | precision | recall | f1-score | support |
|--------------|-----------|--------|----------|---------|
| 0 | 1.00 | 1.00 | 1.00 | 5853 |
| 1 | 1.00 | 1.00 | 1.00 | 5367 |
| accuracy | | | 1.00 | 11220 |
| macro avg | 1.00 | 1.00 | 1.00 | 11220 |
| weighted avg | 1.00 | 1.00 | 1.00 | 11220 |

Gradient Boosting Classifier

```
In [35]: from sklearn.ensemble import GradientBoostingClassifier

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

```
Out[35]: GradientBoostingClassifier(random_state=0)
```

```
In [36]: pred_gbc = GBC.predict(xv_test)
```

```
In [37]: GBC.score(xv_test, y_test)
```

```
Out[37]: 0.9959893048128342
```

```
In [38]: print(classification_report(y_test, pred_gbc))
```


| | precision | recall | f1-score | support |
|--------------|-----------|--------|----------|---------|
| 0 | 1.00 | 0.99 | 1.00 | 5853 |
| 1 | 0.99 | 1.00 | 1.00 | 5367 |
| accuracy | | | 1.00 | 11220 |
| macro avg | 1.00 | 1.00 | 1.00 | 11220 |
| weighted avg | 1.00 | 1.00 | 1.00 | 11220 |

Random Forest Classifier

```
In [39]: from sklearn.ensemble import RandomForestClassifier

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

```
Out[39]: RandomForestClassifier(random_state=0)
```

```
In [40]: pred_rfc = RFC.predict(xv_test)
```

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

```
Out[41]: 0.9941176470588236
```

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

| | precision | recall | f1-score | support |
|--------------|-----------|--------|----------|---------|
| 0 | 0.99 | 1.00 | 0.99 | 5853 |
| 1 | 1.00 | 0.99 | 0.99 | 5367 |
| accuracy | | | 0.99 | 11220 |
| macro avg | 0.99 | 0.99 | 0.99 | 11220 |
| weighted avg | 0.99 | 0.99 | 0.99 | 11220 |

Model Testing

In [43]:

```
def output_lable(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_GBC = GBC.predict(new_xv_test)
    pred_RFC = RFC.predict(new_xv_test)

    return print("\n\nLR Prediction: {} \nDT Prediction: {} \nGBC Prediction: {} \nRFC Prediction: {}".format(output_lable(pred_LR[0]),
    output_lable(pred_DT[0]),

    output_lable(pred_GBC[0]),

    output_lable(pred_RFC[0])))
```

In [44]:

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

BRUSSELS (Reuters) - NATO allies on Tuesday welcomed President Donald Trump's decision to commit more forces to Afghanistan, as part of a new U.S. strategy he said would require more troops and funding from America's partners. Having run for the White House last year on a pledge to withdraw swiftly from Afghanistan, Trump reversed course on Monday and promised a stepped-up military campaign against Taliban insurgents, saying: Our troops will fight to win. U.S. officials said he had signed off on plans to send about 4,000 more U.S. troops to add to the roughly 8,400 now deployed in Afghanistan. But his speech did not define benchmarks for successfully ending the war that began with the U.S.-led invasion of Afghanistan in 2001, and which he acknowledged had required an extraordinary sacrifice of blood and treasure. We will ask our NATO allies and global partners to support our new strategy, with additional troops and funding increases in line with our own. We are confident they will, Trump said. That comment signaled he would further increase pressure on U.S. partners who have already been jolted by his repeated demands to step up their contributions to NATO and his description of the alliance as obsolete - even though, since taking office, he has said this is no longer the case. NATO Secretary General Jens Stoltenberg said in a statement: NATO remains fully committed to Afghanistan and I am looking forward to discussing the way ahead with (Defense) Secretary (James) Mattis and our Allies and international partners. NATO has 12,000 troops in Afghanistan, and 15 countries have pledged more, Stoltenberg said. Britain, a leading NATO member, called the U.S. commitment very welcome. In my call with Secretary Mattis yesterday we agreed that despite the challenges, we have to stay the course in Afghanistan to help build up its fragile democracy and reduce the terrorist threat to the West, Defence Secretary Michael Fallon said. Germany, which has borne the brunt of Trump's criticism over the scale of its defense spending, also welcomed the new U.S. plan. Our continued commitment is necessary on the path to stabilizing the country, a government spokeswoman said. In June, European allies had already pledged more troops but had not given details on numbers, waiting for the Trump administration to outline its strategy for the region. Nearly 16 years after the U.S.-led invasion - a response to the Sept. 11 attacks which were planned by al Qaeda leader Osama bin Laden from Afghanistan - the country is still struggling with weak central government and a Taliban insurgency. Trump said he shared the frustration of the American people who were weary of war without victory, but a hasty withdrawal would create a vacuum for groups like Islamic State and al Qaeda to fill.

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 [45]:

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

Vic Bishop Waking TimesOur reality is carefully constructed by powerful corporate, political and special interest sources in order to covertly sway public opinion. Blatant lies are often televised regarding terrorism, food, war, health, etc. They are fashioned to sway public opinion and condition viewers to accept what have become destructive societal norms. The practice of manipulating and controlling public opinion with distorted media messages has become so common that there is a whole industry formed around this. The entire role of this brainwashing industry is to figure out how to spin information to journalists, similar to the lobbying of government. It is never really clear just how much truth the journalists receive because the news industry has become complacent. The messages that it presents are shaped by corporate powers who often spend millions on advertising with the six conglomerates that own 90% of the media: General Electric (GE), News-Corp, Disney, Viacom, Time Warner, and CBS. Yet, these corporations function under many different brands, such as FOX, ABC, CNN, Comcast, Wall Street Journal, etc, giving people the perception of choice. As Tavistock's researchers showed, it was important that the victims of mass brainwashing not be aware that their environment was being controlled; there should thus be a vast number of sources for information, whose messages could be varied slightly, so as to mask the sense of external control. ~ Specialist of mass brainwashing, L. Wolfe

New Brainwashing Tactic Called AstroturfWith alternative media on the rise, the propaganda machine continues to expand. Below is a video of Sharyl Attkisson, investigative reporter with CBS, during which she explains how astroturf, or fake grassroots movements, are used to spin information not only to influence journalists but to sway public opinion. Astroturf is a perversion of grassroots. Astroturf is when political, corporate or other special interests disguise themselves and publish blogs, start facebook and twitter accounts, publish ads, letters to the editor, or simply post comments online, to try to fool you into thinking an independent or grassroots movement is speaking. ~ Sharyl Attkisson, Investigative Reporter

How do you separate fact from fiction? Sharyl Attkisson finishes her talk with some insights on how to identify signs of propaganda and astroturfing. These methods are used to give people the impression that there is widespread support for an agenda, when, in reality, one may not exist. Astroturf tactics are also used to discredit or criticize those that disagree with certain agendas, using stereotypical names such as conspiracy theorist or quack. When in fact when someone dares to reveal the truth or questions the official story, it should spark a deeper curiosity and encourage further scrutiny of the information. This article (Journalist Reveals Tactics Brainwashing Industry Uses to Manipulate the Public) was originally created and published by Waking Times and is published here under a Creative Commons license with attribution to Vic Bishop and WakingTimes.com. It may be re-posted freely with proper attribution, author bio, and this copyright statement. READ MORE MSM PROPAGANDA NEWS AT: 21st Century Wire MSM Watch Files

LR Prediction: Fake News

DT Prediction: Fake News

GBC Prediction: Fake News

RFC Prediction: Fake News

In [46]:

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

SAO PAULO (Reuters) - Cesar Mata Pires, the owner and co-founder of Brazilian engineering conglomerate OAS SA, one of the largest companies involved in Brazil's corruption scandal, died on Tuesday. He was 68. Mata Pires died of a heart attack while taking a morning walk in an upscale district of S o Paulo, where OAS is based, a person with direct knowledge of the matter said. Efforts to contact his family were unsuccessful. OAS declined to comment. The son of a wealthy cattle rancher in the northeastern state of Bahia, Mata Pires' links to politicians were central to the expansion of OAS, which became Brazil's No. 4 builder earlier this decade, people familiar with his career told Reuters last year. His big break came when he befriended Antonio Carlos Magalhães, a popular politician who was Bahia governor several times, and eventually married his daughter Tereza. Brazilians joked that OAS stood for Obras Arranjadas pelo Sogro - or Work Arranged by the Father-In-Law. After years of steady growth triggered by a flurry of massive government contracts, OAS was ensnared in Operation Car Wash which unearthed an illegal contracting ring between state firms and builders. The ensuing scandal helped topple former Brazilian President Dilma Rousseff last year. Trained as an engineer, Mata Pires founded OAS with two colleagues in 1976 to do sub-contracting work for larger rival Odebrecht SA - the biggest of the builders involved in the probe. Before the scandal, Forbes magazine estimated Mata Pires' fortune at \$1.6 billion. He dropped off the magazine's billionaire list in 2015, months after OAS sought bankruptcy protection after the Car Wash scandal. While Mata Pires was never accused of wrongdoing in the investigations, creditors demanded he and his family stay away from the builder's day-to-day operations, people directly involved in the negotiations told Reuters at the time. He is survived by his wife and his two sons.

LR Prediction: Not A Fake News

DT Prediction: Not A Fake News

GBC Prediction: Not A Fake News

RFC Prediction: Not A Fake News