

## Fake news detection problem

```
In [1]: import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.metrics import classification_report
import re
import string

In [2]: df_fake = pd.read_csv("fake.csv")
df_true = pd.read_csv("True.csv")

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

	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(10)
```

	title	text	subject	date
0	As U.S. budget fight looms, Republicans flip L...	WASHINGTON (Reuters) - The head of a conservat...	politicsNews	December 31, 2017
1	U.S. military to accept transgender recruits o...	WASHINGTON (Reuters) - Transgender people wil...	politicsNews	December 29, 2017
2	Senior U.S. Republican senator: 'Let Mr. Muel...	WASHINGTON (Reuters) - The special counsel inv...	politicsNews	December 31, 2017
3	FBI Russia probe helped by Australian diplom...	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
5	White House, Congress prepare for talks on spe...	WEST PALM BEACH, Fla./WASHINGTON (Reuters) - T...	politicsNews	December 29, 2017
6	Trump says Russia probe will be fair, but time...	WEST PALM BEACH, Fla (Reuters) - President Don...	politicsNews	December 29, 2017
7	Factbox: Trump on Twitter (Dec 29) - Approval...	The following statements were posted to the ve...	politicsNews	December 29, 2017
8	Trump on Twitter (Dec 28) - Global Warming	The following statements were posted to the ve...	politicsNews	December 29, 2017
9	Alabama official to certify Senator-elect Jone...	WASHINGTON (Reuters) - Alabama Secretary of St...	politicsNews	December 28, 2017

```
In [6]: df_fake["class"] = 0
df_true["class"] = 1

In [7]: df_fake.shape, df_true.shape
```

```
Out[7]: ((23481, 5), (21417, 5))

In [8]: 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 [9]: df_manual_testing = pd.concat([df_fake_manual_testing, df_true_manual_testing], axis=0)
df_manual_testing.to_csv("manual_testing.csv")

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

	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 Mu...	Just when you might have thought we'd get a br...	News	December 21, 2017	0

```
In [11]: df = df_merge.drop(["title", "subject", "date"], axis=1)
df.head(10)
```

	text	class
0	Donald Trump just couldn't wish all Americans ...	0
1	House Intelligence Committee Chairman Devin Nu...	0
2	On Friday, it was revealed that former Milwauk...	0
3	On Christmas day, Donald Trump announced that ...	0
4	Pope Francis used his annual Christmas Day mes...	0
5	The number of cases of cops brutalizing and ki...	0
6	Donald Trump spent a good portion of his day a...	0
7	In the wake of yet another court decision that...	0
8	Many people have raised the alarm regarding th...	0
9	Just when you might have thought we'd get a br...	0

```
In [12]: df = df.sample(frac=1)

In [13]: df.head(10)
```

	text	class
19873	The enthusiasm for Hillary is well underwhelmi...	0
15431	TRUMP SAYS THE BORDER PATROL IS PETRIIFIED:	0
15515	There's no need for Barack Obama and Valerie J...	0
12729	PARIS (Reuters) - World powers attempted to sh...	1
2067	BAGHDAD (Reuters) - Iraqi forces breached on T...	1
1557	PHOENIX (Reuters) - Two National Football Leag...	1
20903	Spread this EVERYWHERE!	0
897	A couple of weeks ago, Donald Trump's voter fr...	0
10111	WASHINGTON (Reuters) - U.S. Republican preside...	1
11093	(Reuters) - U.S. Democratic presidential candi...	1

```
In [14]: df.isnull().sum()
```

```
Out[14]: text      0
class      0
dtype: int64

In [15]: def word_drop(text):
    text = text.lower()
    text = re.sub('[^\w\s]', '', text)
    text = re.sub("\W+", " ", text)
    text = re.sub('https?://\S+|ww\.\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 [16]: df["text"] = df["text"].apply(word_drop)

In [17]: df.head(10)
```

	text	class
19873	the enthusiasm for hillary is well underwhelmi...	0
15431	trump says the border patrol is petified	0
15515	there's no need for barack obama and valerie j...	0
12729	paris reuters world powers attempted to sh...	1
2067	baghdad reuters iraqi forces breached on t...	1
1557	phoenix reuters two national football leag...	1
20903	spread this everywhere	0
897	a couple of weeks ago donald trump's voter fr...	0
10111	washington reuters u s republican preside...	1
11093	reuters u s democratic presidential candi...	1

```
In [18]: x = df["text"]
y = df["class"]

In [19]: x_train, x_test, y_train, y_test = train_test_split(x,y, test_size = 0.25)

In [21]: from sklearn.feature_extraction.text import TfidfVectorizer

In [22]: vectorization = TfidfVectorizer()
xv_train = vectorization.fit_transform(x_train)
xv_test = vectorization.transform(x_test)
```

## Logistic Regression

```
In [23]: from sklearn.linear_model import LogisticRegression

In [24]: LR = LogisticRegression()
LR.fit(xv_train, y_train)

Out[24]: LogisticRegression()
```

```
In [25]: LR.score(xv_test, y_test)
```

```
Out[25]: 0.9862745980939216

In [26]: pred_LR = LR.predict(xv_test)

In [27]: print(classification_report(y_test, pred_LR))
```

	precision	recall	f1-score	support
0	0.98	0.98	0.99	5864
1	0.99	0.99	0.99	5356
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 [28]: from sklearn.tree import DecisionTreeClassifier

In [29]: DT = DecisionTreeClassifier()
DT.fit(xv_train, y_train)

Out[29]: DecisionTreeClassifier()
```

```
In [30]: DT.score(xv_test, y_test)
```

```
Out[30]: 0.9954545454545455

In [31]: pred_DT = DT.predict(xv_test)

In [32]: print(classification_report(y_test, pred_DT))
```

	precision	recall	f1-score	support
0	1.00	1.00	1.00	5864
1	1.00	0.99	1.00	5356
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 [34]: from sklearn.ensemble import GradientBoostingClassifier

In [35]: GBC = GradientBoostingClassifier(random_state=0)
GBC.fit(xv_train, y_train)

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

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

```
Out[36]: 0.9944741532976827

In [37]: pred_GBC = GBC.predict(xv_test)

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

	precision	recall	f1-score	support
0	1.00	0.99	0.99	5864
1	0.99	1.00	0.99	5356
accuracy			0.99	11220
macro avg	0.99	0.99	0.99	11220
weighted avg	0.99	0.99	0.99	11220

## Random Forest Classifier

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

In [40]: RFC = RandomForestClassifier(random_state=0)
RFC.fit(xv_train, y_train)

Out[40]: RandomForestClassifier(random_state=0)
```

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

```
Out[41]: 0.989572192513369

In [42]: pred_RFC = RFC.predict(xv_test)

In [43]: print(classification_report(y_test, pred_RFC))
```

	precision	recall	f1-score	support
0	0.99	0.99	0.99	5864
1	0.99	0.99	0.99	5356
accuracy			0.99	11220
macro avg	0.99	0.99	0.99	11220
weighted avg	0.99	0.99	0.99	11220

## Manual Testing

```
In [56]: 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(word_drop)
    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_label(pred_LR),output_label(pred_DT), output_label(pred_GBC), c

In [57]: news = str(input())
manual_testing(news)
```

Robert Fantina CounterpunchAlthough the United States is still ten months from its next exercise in electoral futility, most polls do not indicate what former Secretary of State Hilary Clinton is most anxious to see: a runaway victory for her candidacy. It is a good sign that, despite the fact that she has no real contrasting opponent on the Democratic side, the coronation she expected isn't going to happen.One might say that this writer focuses too much on Mrs. Clinton's adoration of Israel. But by looking at her comments about the apartheid nation, one gets a clear view of some broader, very troubling perspectives that Mrs. Clinton seems to hold.On January 6, an opinion piece appeared in The Jewish Journal, written by Mrs. Clinton. It is a fawning, maudlin essay, typical of the writing of anyone seeking national political office in the U.S. who knows they must pay homage to their Israeli lord and master. A few points from this essay tell much about Mrs. Clinton. I'm especially concerned about the new wave of violence inside Israel itself: brutal stabbings, shootings, and vehicle attacks that seek to sow fear among the innocent. The number of Palestinians killed in the West Bank alone by settler and IOF (Israel Occupation Force) terrorists is at a ten-year high. Why is Mrs. Clinton not especially concerned about the continuing wave of violence against Palestinians, in an area that even the U.S. says Israel occupies illegally? Do not these vicious attacks seek to sow fear among the innocent? Only a two-state solution negotiated between the parties can provide Palestinians independence, sovereignty, and dignity, and provide Israelis the secure and recognized borders of a democratic Jewish state. Why, oh why, does Mrs. Clinton continue to make this ridiculous statement? The borders of the Jewish state are recognized by most of the world, including the United Nations, and consist of those determined prior to 1967. There is nothing to negotiate. Does Mrs. Clinton disdain international law? It appears that she feels Israel, like the U.S. in its international dealings, is, indeed, above the law. **SID FIRST: Hillary Clinton will never tell Israel the no.** And this writer must point out, once again, that negotiations, which have proceeded on and off for twenty years or so, can only be effective when each side wants something other than, that it can only obtain by surrendering something to has. Israel wants all of Palestine, and takes it, piece by piece, with complete impunity. Why should Mrs. Clinton agree to pointless negotiations? Mrs. Clinton refers to the secure and recognized borders of a Jewish state, but does not seem to consider the secure and recognized borders of a Palestinian state. We must continue to fight against global efforts to delegitimize Israel. The Boycott, Divestment, and Sanctions movement, known as BDS, is the latest front in this battle. BDS demonizes Israeli scientists and intellectuals even young students and compares Israel to South African apartheid. That's wrong and this campaign should end. The most significant efforts to delegitimize Israel are made by Israel itself. Its racist society, wherein Israeli Jews have more rights than anyone else in Israel; its apartheid system of segregation; its complete disdain for the human rights of the Palestinians; the racist, murderous statements made by government officials all further delegitimize the country, and demonize it, and rightly so. Israel is often compared to South African apartheid, and the comparison is valid.And it is not just in the context of Palestine and Israel that Mrs. Clinton demonstrates either gross ignorance, or gross dishonesty. Her essay also contained these pearls of wisdom: We must work with our friends and partners to deny ISIS territory in the Middle East, dismantle the global infrastructure of terror, and toughen our defenses at home. We can't just contain ISIS. We must defeat ISIS. It's that really the U.S.'s goal? Garikal Chengu, a researcher at Harvard University, suggested in September of 2014 that ISIS is made-in-the-USA, an instrument of terror designed to divide and conquer the oil-rich Middle East and to counter Iran's growing influence in the region. In June, 2015 column in The Guardian, Associate Editor Seumas Milne said this: [T]he U.S. and its allies weren't only supporting and arming an opposition they knew to be dominated by extreme sectarian groups; they were prepared to countenance the creation of some sort of Islamic state despite the grave danger to Iraq's unity as a Sunni buffer to weaken Syria. Continue this article at Counterpunch READ MORE 2016 ELECTION NEWS AT: 21st Century Wire 2016 For Me

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

```
In [58]: news = str(input())
manual_testing(news)
```

GENEVA (Reuters) - North Korea and the United States clashed at a U.N. forum on Tuesday over their military intentions towards one another, with Pyongyang's envoy declaring it would never put its nuclear deterrent on the negotiating table. Japan, well within reach of North Korea's missiles, said the world must maintain pressure on the reclusive country to rein in its nuclear and missile programs and now was not the time for a resumption of multi-party talks. North Korea has pursued its weapons programs in defiance of U.N. Security Council sanctions and ignored all calls, including from major ally China, to stop, prompting a bellicose exchange of rhetoric between the North and the United States. North Korea justified its weapons programs, including its recent threat to fire missiles towards the U.S. Pacific territory of Guam, by pointing to perceived U.S. hostility, such as military exercises with South Korea this week. U.S. disarmament ambassador Robert Wood told a U.N.-sponsored Conference on Disarmament in Geneva U.S. President Donald Trump's top priority was to protect the United States and its allies against the growing threat from North Korea and America was ready to use the full range of capabilities at its disposal. The path to dialogue still remained an option for Pyongyang and it had the choice between poverty and belligerence on the one hand and prosperity and acceptance. North Korea's envoy told the same forum the North's nuclear deterrent would never be up for negotiation, echoing Pyongyang's regular denunciation of U.S. aggression. The measures taken by the DPRK to strengthen its nuclear deterrence and develop inter-continental rockets is justifiable and a legitimate option for self-defense in the face of such apparent and real threats, diplomat Ju Yong Chol told the forum, referring to constant nuclear threats by the United States. DPRK stands for the North's official name, the Democratic People's Republic of Korea. Regarding joint U.S.-South Korean military exercises that began on Monday, he warned: The ongoing military adventure would certainly add gasoline to the fire, driving the current tense situation to further deterioration. Japanese Foreign Minister Taro Kono said pressure must be maintained until the North demonstrated it would give up its nuclear program. It's not the time to discuss (the resumption of) six-party talks, Kono said, referring to stalled negotiations involving both Koreas, the United States, Russia, China and Japan. It's time to exert pressure, he told reporters. The head of the U.S. military's Pacific Command said diplomacy was key. Admiral Harry Harris was in South Korea to observe annual joint military drills with the South Korean military, which the North called a step towards nuclear conflict masterminded by war maniacs. So we hope and we work for diplomatic solutions to the challenge presented by Kim Jong Un, Harris told reporters at a U.S. air base in Osan, about an hour from Seoul, referring to the North Korean leader. He said diplomacy was the most important starting point in response to the North's threat, when asked what actions by North Korea might trigger a preemptive U.S. strike against it. As far as a timeline, it would be crazy for me to share with you those tripwires in advance. If we did that, it would hardly be a military strategy, he said. The United States and South Korea began the long-planned exercises on Monday, called the Ulchi Freedom Guardian, which the allies have said are purely defensive. The drills involve tens of thousands of troops as well as computer simulations designed to prepare for war with a nuclear-capable North Korea. The United States and South Korea are technically still at war with the North because their 1950-53 conflict ended in a truce, not a peace treaty. Delegations from about 20 countries spoke at the four-hour U.N. session, including Britain, France, Australia and South Korea, all of which criticized North Korea. I would like to repeat the appeal to the DPRK to listen to the fact that there is no alternative to stopping the different provocations and to return to dialogue, South Korean ambassador Kim Inchul said. We have never threatened the DPRK with any attacks and we have never promoted the use of force.

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 [ ]:
```