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In [1]: import numpy as np
import pandas as pd
import itertools
from sklearn.model_selection import train_test_split
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.linear_model import PassiveAggressiveClassifier
from sklearn.metrics import accuracy_score, confusion_matrix
```

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In [2]: df=pd.read_csv("C:\\Users\\DISHA ARYA\\Downloads\\news.csv")
df.shape
df.head()
```

```
Out[2]:
```

	Unnamed: 0		title	text	label
0	8476	You Can Smell Hillary's Fear	Daniel Greenfield, a Shillman Journalism Fello...		FAKE
1	10294	Watch The Exact Moment Paul Ryan Committed Pol...	Google Pinterest Digg LinkedIn Reddit Stumbleu...		FAKE
2	3608	Kerry to go to Paris in gesture of sympathy	U.S. Secretary of State John F. Kerry said Mon...		REAL
3	10142	Bernie supporters on Twitter erupt in anger ag...	— Kaydee King (@KaydeeKing) November 9, 2016 T...		FAKE
4	875	The Battle of New York: Why This Primary Matters	It's primary day in New York and front-runners...		REAL

```
In [3]: labels=df.label
labels.head()
```

```
Out[3]: 0    FAKE
1    FAKE
2    REAL
3    FAKE
4    REAL
Name: label, dtype: object
```

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In [4]: x_train,x_test,y_train,y_test=train_test_split(df['text'], labels, test_size=0.2,
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In [ ]:
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In [5]: tfidf_vectorizer=TfidfVectorizer(stop_words='english', max_df=0.7)
tfidf_train=tfidf_vectorizer.fit_transform(x_train)
tfidf_test=tfidf_vectorizer.transform(x_test)
```

```
In [6]: pac=PassiveAggressiveClassifier(max_iter=50)
pac.fit(tfidf_train,y_train)
y_pred=pac.predict(tfidf_test)
score=accuracy_score(y_test,y_pred)
print(f'Accuracy: {round(score*100,2)}%')
```

Accuracy: 92.5%

```
In [7]: confusion_matrix(y_test,y_pred, labels=['FAKE','REAL'])
```

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Out[7]: array([[584,  54],
               [ 41, 588]], dtype=int64)
```

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In [ ]:
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