

13.Source Code:

```
import pandas as pd

import matplotlib.pyplot as plt

from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.linear_model import PassiveAggressiveClassifier
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score

import nltk

nltk.download('stopwords')

# Sample fake news dataset (You can replace with your CSV file)
data = {

    'text': [

        'The moon landing was faked.',

        'COVID-19 vaccines are effective and safe.',
```

```
'Aliens built the pyramids.',  
  'Global warming is caused by humans.'  
],  
'label': ['FAKE', 'REAL', 'FAKE', 'REAL']  
}
```

```
# Convert to DataFrame
```

```
df = pd.DataFrame(data)
```

```
# Prepare the data
```

```
x_train, x_test, y_train, y_test = train_test_split(df['text'], df['label'], test_size=0.25,  
random_state=7)
```

```
# Vectorize text
```

```
vectorizer = TfidfVectorizer(stop_words='english', max_df=0.7)
```

```
x_train_vec = vectorizer.fit_transform(x_train)
```

```
x_test_vec = vectorizer.transform(x_test)
```

```
# Classifier
```

```
model = PassiveAggressiveClassifier(max_iter=50)
```

```
model.fit(x_train_vec, y_train)
```

```
# Predictions
```

```
y_pred = model.predict(x_test_vec)
```

```
# Accuracy
```

```
acc = accuracy_score(y_test, y_pred)
```

```
print(f'Accuracy: {round(acc*100, 2)}%')
```

```
# Plot bar chart
```

```
results = pd.DataFrame({'Article': x_test.index, 'Prediction': y_pred})
```

```
label_counts = results['Prediction'].value_counts()
```

```
# Bar Chart
```

```
plt.figure(figsize=(6,4))
```

```
label_counts.plot(kind='bar', color=['red', 'green'])
```

```
plt.title('Fake News Detection Results')
```

```
plt.xlabel('Label')
```

```
plt.ylabel('Number of Articles')
```

```
plt.xticks(rotation=0)
```

```
plt.tight_layout()
```

```
plt.show()
```