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import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split as ttp
from sklearn.metrics import classification_report
import re
import string
import matplotlib.pyplot as plt
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.linear_model import LogisticRegression, LinearRegression
from sklearn.tree import DecisionTreeClassifier
from sklearn.ensemble import RandomForestClassifier
from sklearn.neighbors import KNeighborsClassifier

data_true = pd.read_csv('/content/drive/MyDrive/files2/True2.csv')
data_fake = pd.read_csv('/content/drive/MyDrive/files2/Fake 1.csv')

data_true['label'] = 1
data_fake['label'] = 0

data_true_manual_testing = data_true.tail(10)
data_true = data_true.iloc[:-10]

data_fake_manual_testing = data_fake.tail(10)
data_fake = data_fake.iloc[:-10]

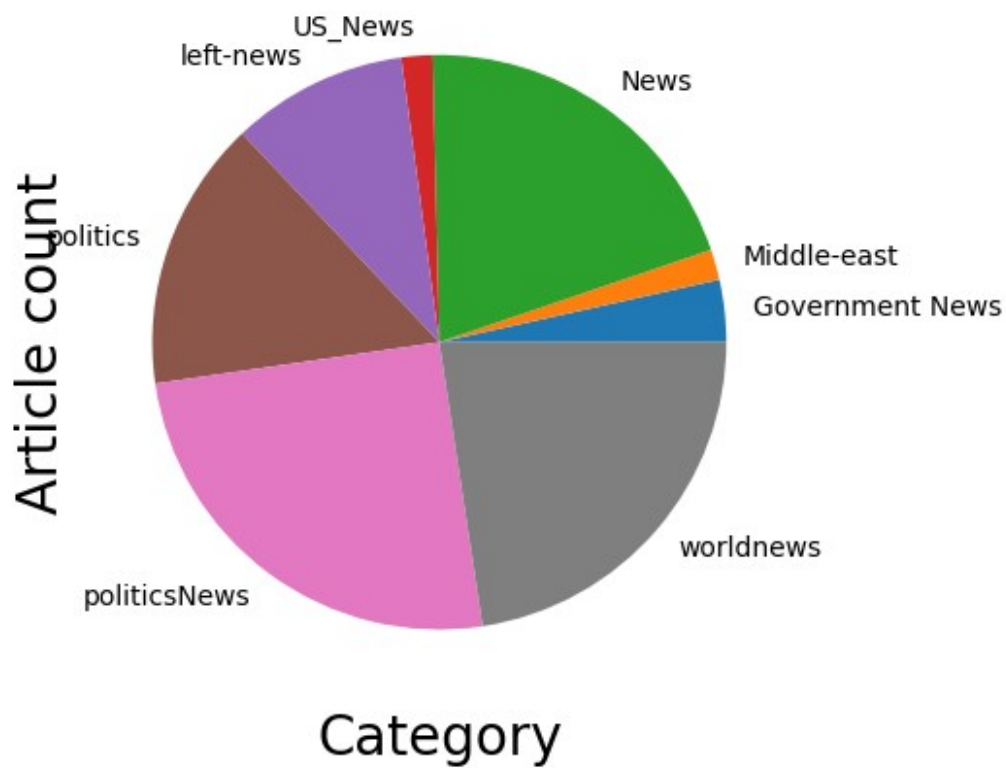
data_manual_testing = pd.concat([data_true_manual_testing,
data_fake_manual_testing], axis=0)
data_manual_testing.to_csv('manual_testing.csv', index=False)

data_merge = pd.concat([data_true, data_fake], axis=0)

print(data_merge.groupby(['subject'])['text'].count())
data_merge.groupby(['subject'])['text'].count().plot(kind='pie')
plt.xlabel("Category", size=20)
plt.ylabel("Article count", size=20)
plt.show()

subject
Government News    1570
Middle-east        768
News               9050
US_News            783
left-news          4459
politics           6841
politicsNews       11272
worldnews          10135
Name: text, dtype: int64

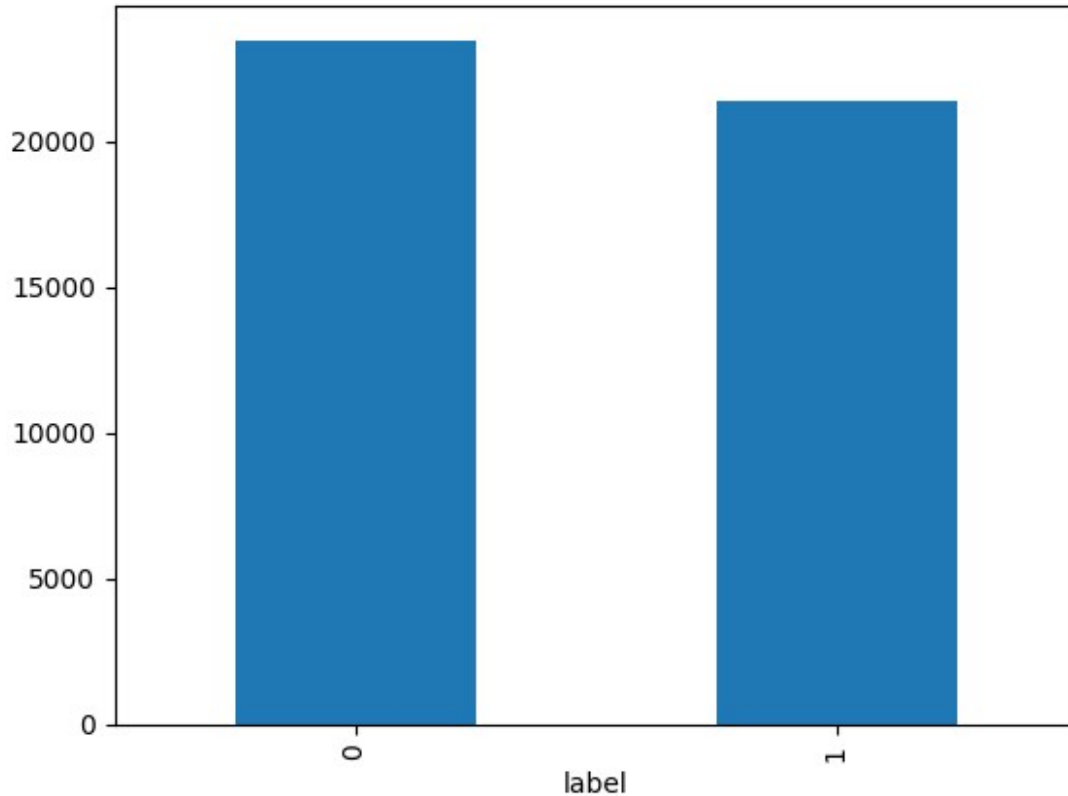
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print(data_merge.groupby(['label'])['text'].count())
print("0 = Fake news\n1 = True news")
data_merge.groupby(['label'])['text'].count().plot(kind='bar')
plt.title("Fake news and True News", size=20)
plt.show()
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```
label
0    23471
1    21407
Name: text, dtype: int64
0 = Fake news
1 = True news
```

Fake news and True News



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data = data_merge.drop(['title', 'subject', 'date'], axis=1)
data = data.sample(frac=1).reset_index(drop=True)

print(data.isnull().sum())

text      0
label     0
dtype: int64

def filtering(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

data['text'] = data['text'].apply(filtering)
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vectorizer = TfidfVectorizer()
x = vectorizer.fit_transform(data['text'])
y = data['label']

x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.25,
random_state=0)

LR = LogisticRegression(max_iter=1000)
LR.fit(x_train, y_train)

LogisticRegression(max_iter=1000)

DT = DecisionTreeClassifier()
DT.fit(x_train, y_train)

DecisionTreeClassifier()

RF = RandomForestClassifier()
RF.fit(x_train, y_train)

RandomForestClassifier()

LinR = LinearRegression()
LinR.fit(x_train, y_train)

LinearRegression()

KNN = KNeighborsClassifier()
KNN.fit(x_train, y_train)

KNeighborsClassifier()

user_input = input("Enter the news article text: ")
user_input_transformed = vectorizer.transform([user_input])

Enter the news article text: In keeping with a sharp pivot under way
among Republicans

prediction_LR = LR.predict(user_input_transformed)
if prediction_LR == 1:
    print("Logistic Regression: This news article is real.")
else:
    print("Logistic Regression: This news article is fake.")

prediction_DT = DT.predict(user_input_transformed)
if prediction_DT == 1:
    print("Decision Tree: This news article is real.")
else:
    print("Decision Tree: This news article is fake.")

prediction_RF = RF.predict(user_input_transformed)
if prediction_RF == 1:
    print("Random Forest: This news article is real.")

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else:
    print("Random Forest: This news article is fake.")

prediction_LinR = LinR.predict(user_input_transformed)

prediction_LinR = np.where(prediction_LinR >= 0.5, 1, 0)
if prediction_LinR == 1:
    print("Linear Regression: This news article is real.")
else:
    print("Linear Regression: This news article is fake.")

prediction_KNN = KNN.predict(user_input_transformed)
if prediction_KNN == 1:
    print("K-Nearest Neighbors: This news article is real.")
else:
    print("K-Nearest Neighbors: This news article is fake.")

Logistic Regression: This news article is fake.
Decision Tree: This news article is fake.
Random Forest: This news article is fake.
Linear Regression: This news article is fake.
K-Nearest Neighbors: This news article is fake.

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