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1  # Import the necessary modules
2  from sklearn.metrics import confusion_matrix, classification_report
3  from sklearn.preprocessing import LabelEncoder
4  from sklearn.model_selection import train_test_split
5  from sklearn.linear_model import LogisticRegression
6  from sklearn.svm import SVC
7  from sklearn.naive_bayes import GaussianNB
8  from sklearn.ensemble import RandomForestClassifier
9  from sklearn.neural_network import MLPClassifier
10 from sklearn.metrics import accuracy_score
11
12 # Load the dataset
13 data = pd.read_csv('data.csv')
14
15 # Split the data into training and testing sets
16 X_train, X_test, y_train, y_test = train_test_split(data, data['category'],
17                                                    test_size=0.2,
18                                                    random_state=42)
19
20 # Encode the target variable
21 le = LabelEncoder()
22 y_train = le.fit_transform(y_train)
23 y_test = le.transform(y_test)
24
25 # Train the models
26 lr = LogisticRegression()
27 svm = SVC()
28 nb = GaussianNB()
29 rf = RandomForestClassifier()
30 mlp = MLPClassifier()
31
32 # Evaluate the models
33 lr.fit(X_train, y_train)
34 svm.fit(X_train, y_train)
35 nb.fit(X_train, y_train)
36 rf.fit(X_train, y_train)
37 mlp.fit(X_train, y_train)
38
39 # Predict on the test set
40 lr_pred = lr.predict(X_test)
41 svm_pred = svm.predict(X_test)
42 nb_pred = nb.predict(X_test)
43 rf_pred = rf.predict(X_test)
44 mlp_pred = mlp.predict(X_test)
45
46 # Calculate the accuracy of each model
47 lr_acc = accuracy_score(y_test, lr_pred)
48 svm_acc = accuracy_score(y_test, svm_pred)
49 nb_acc = accuracy_score(y_test, nb_pred)
50 rf_acc = accuracy_score(y_test, rf_pred)
51 mlp_acc = accuracy_score(y_test, mlp_pred)
52
53 # Print the accuracy of each model
54 print('Logistic Regression Accuracy: %.2f' % lr_acc)
55 print('Support Vector Machine Accuracy: %.2f' % svm_acc)
56 print('Naive Bayes Accuracy: %.2f' % nb_acc)
57 print('Random Forest Accuracy: %.2f' % rf_acc)
58 print('Neural Network Accuracy: %.2f' % mlp_acc)

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