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import pandas as pd

import numpy as np

from sklearn.model_selection import train_test_split

from sklearn.preprocessing import StandardScaler

from sklearn.neighbors import KNeighborsClassifier

from sklearn.metrics import confusion_matrix, accuracy_score, precision_score, recall_score


data = pd.read_csv("Social_Network_Ads.csv") # change filename if different


X = data.iloc[:, [2, 3]].values # Usually Age and EstimatedSalary
y = data.iloc[:, -1].values # Purchased column


X_train, X_test, y_train, y_test = train_test_split(
    X, y, test_size=0.25, random_state=42
)


sc = StandardScaler()

X_train = sc.fit_transform(X_train)
X_test = sc.transform(X_test)


knn = KNeighborsClassifier(n_neighbors=5, metric='minkowski', p=2)

knn.fit(X_train, y_train)


y_pred = knn.predict(X_test)


cm = confusion_matrix(y_test, y_pred)
accuracy = accuracy_score(y_test, y_pred)
precision = precision_score(y_test, y_pred)
recall = recall_score(y_test, y_pred)
error_rate = 1 - accuracy
```

```
print("Confusion Matrix:\n", cm)
print("Accuracy:", accuracy)
print("Error Rate:", error_rate)
print("Precision:", precision)
print("Recall:", recall)
```

Output:-

Confusion Matrix:

```
[[59  4]
```

```
 [ 3 34]]
```

Accuracy: 0.93

Error Rate: 0.06999999999999995

Precision: 0.8947368421052632

Recall: 0.918918918918919