

pgm8.py

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1  '''exp-8: Write a program to implement k-Nearest Neighbour algorithm to classify the iris
   data set.
2  Print both correct and wrong predictions. Java/Python ML library classes can be used for
3  this problem.'''
4
5  from sklearn.datasets import load_iris
6  from sklearn.model_selection import train_test_split
7  from sklearn.neighbors import KNeighborsClassifier
8  from sklearn.metrics import accuracy_score
9
10 # Load the Iris dataset
11 iris = load_iris()
12 X = iris.data
13 y = iris.target
14
15 # Split the dataset into training and testing sets
16 X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3, random_state=42)
17
18 # Initialize k-NN classifier
19 knn = KNeighborsClassifier(n_neighbors=3)
20
21 # Train the classifier
22 knn.fit(X_train, y_train)
23
24 # Predict the labels for the test set
25 y_pred = knn.predict(X_test)
26
27 # Calculate accuracy
28 accuracy = accuracy_score(y_test, y_pred)
29 print("Accuracy:", accuracy)
30
31 # Print correct and wrong predictions
32 print("\nCorrect predictions:")
33 for i in range(len(y_test)):
34     if y_pred[i] == y_test[i]:
35         print("Predicted:", y_pred[i], "Actual:", y_test[i])
36
37 print("\nWrong predictions:")
38 for i in range(len(y_test)):
39     if y_pred[i] != y_test[i]:
40         print("Predicted:", y_pred[i], "Actual:", y_test[i])
41
42 '''OUTPUT
43 Accuracy: 1.0
44
45 Correct predictions:
46 Predicted: 1 Actual: 1
47 Predicted: 0 Actual: 0
48 Predicted: 2 Actual: 2
49 Predicted: 1 Actual: 1
50 Predicted: 1 Actual: 1
51 Predicted: 0 Actual: 0
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52 Predicted: 1 Actual: 1
53 Predicted: 2 Actual: 2
54 Predicted: 1 Actual: 1
55 Predicted: 1 Actual: 1
56 Predicted: 2 Actual: 2
57 Predicted: 0 Actual: 0
58 Predicted: 0 Actual: 0
59 Predicted: 0 Actual: 0
60 Predicted: 0 Actual: 0
61 Predicted: 1 Actual: 1
62 Predicted: 2 Actual: 2
63 Predicted: 1 Actual: 1
64 Predicted: 1 Actual: 1
65 Predicted: 2 Actual: 2
66 Predicted: 0 Actual: 0
67 Predicted: 2 Actual: 2
68 Predicted: 0 Actual: 0
69 Predicted: 2 Actual: 2
70 Predicted: 2 Actual: 2
71 Predicted: 2 Actual: 2
72 Predicted: 2 Actual: 2
73 Predicted: 2 Actual: 2
74 Predicted: 0 Actual: 0
75 Predicted: 0 Actual: 0
76 Predicted: 0 Actual: 0
77 Predicted: 0 Actual: 0
78 Predicted: 1 Actual: 1
79 Predicted: 0 Actual: 0
80 Predicted: 0 Actual: 0
81 Predicted: 2 Actual: 2
82 Predicted: 1 Actual: 1
83 Predicted: 0 Actual: 0
84 Predicted: 0 Actual: 0
85 Predicted: 0 Actual: 0
86 Predicted: 2 Actual: 2
87 Predicted: 1 Actual: 1
88 Predicted: 1 Actual: 1
89 Predicted: 0 Actual: 0
90 Predicted: 0 Actual: 0
91
92 Wrong predictions:
93 ...
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