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from sklearn.model_selection import train_test_split
from sklearn.neighbors import KNeighborsClassifier
from sklearn import datasets

iris=datasets.load_iris()
print("Iris Data set loaded...")

x_train, x_test, y_train, y_test =
train_test_split(iris.data,iris.target,test_size=0.1)
print("Dataset is split into training and testing...")
print("Size of training data and its label",x_train.shape,y_train.shape)
print("Size of training data and its label",x_test.shape, y_test.shape)

for i in range(len(iris.target_names)):
    print("Label", i , "-",str(iris.target_names[i]))

classifier = KNeighborsClassifier(n_neighbors=1)
classifier.fit(x_train, y_train)
y_pred=classifier.predict(x_test)

print("Results of Classification using K-nn with K=1 ")
for r in range(0,len(x_test)):
    print(" Sample:", str(x_test[r]), " Actual-label:", str(y_test[r]), "
Predicted-label:",str(y_pred[r]))

print("Classification Accuracy :", classifier.score(x_test,y_test));

from sklearn.metrics import classification_report, confusion_matrix
print('Confusion Matrix')
print(confusion_matrix(y_test,y_pred))
print('Accuracy Metrics')
print(classification_report(y_test,y_pred))

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