**Script:**

**# -\*- coding: utf-8 -\*-**

**"""**

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**"""**

**import sklearn**

**import sklearn.model\_selection**

**import sklearn.neighbors**

**from sklearn.model\_selection import train\_test\_split**

**#from sklearn import tree**

**#from sklearn import ensemble**

**#from sklearn import svm**

**import pandas as pd**

**# Load dataset**

**df = pd.read\_csv('D:/AI/39\_Ecoli/ecoli.data', sep=r'\s+', header=None)**

**X = df.iloc[:, 1:-1] # Skips the first column (ID) and selects features**

**y = df.iloc[:, -1] # Last column as target**

**# Split into training and test sets**

**X\_train, X\_test, y\_train, y\_test = train\_test\_split(**

**X, y, test\_size=0.3, random\_state=42, stratify=y**

**)**

**# Feature scaling**

**scaler = sklearn.preprocessing.StandardScaler()**

**X\_train= scaler.fit\_transform(X\_train)**

**X\_test = scaler.transform(X\_test)**

**# Initialize classifier**

**klasif = sklearn.neighbors.KNeighborsClassifier(n\_neighbors=3, weights='distance')**

**#klasif = tree.DecisionTreeClassifier(criterion='gini', max\_depth=3, min\_samples\_split=5)**

**#klasif = ensemble.RandomForestClassifier(criterion='entropy')**

**#klasif = svm.SVC()**

**klasif.fit(X\_train, y\_train)**

**# Predict on the test set**

**y\_pred = klasif.predict(X\_test)**

**# Evaluate**

**accuracy = sklearn.metrics.accuracy\_score(y\_test, y\_pred)**

**print('Accuracy on test set:', accuracy)**

**precision = sklearn.metrics.precision\_score(y\_test, y\_pred, average=None, zero\_division=1)**

**print('Precision on test set:', precision)**

**recall = sklearn.metrics.recall\_score(y\_test, y\_pred, average=None, zero\_division=1)**

**print('Recall on test set:', recall)**

**f1 = sklearn.metrics.f1\_score(y\_test, y\_pred, average=None)**

**print('F1 on test set:', f1)**

**conf\_mat = sklearn.metrics.confusion\_matrix(y\_test, y\_pred)**

**print(conf\_mat)**

1. **K Nearest Neighbors.** A screenshot of a computer

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   AI-generated content may be incorrect.
2. **Decision Tree;** A screenshot of a computer

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3. **Random Forest;** A screenshot of a computer

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4. **Support Vector Machines;** A screenshot of a computer

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