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import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn import datasets
from sklearn.cluster import KMeans
from sklearn.metrics import accuracy_score, classification_report

iris = datasets.load_iris()
iris = pd.DataFrame(data= np.c_[iris['data'], iris['target']], columns=
iris['feature_names'] + ['species'])
iris.columns = iris.columns.str.replace(' ', '')

X = iris.ix[:, :4]
Y = iris.ix[:, 4]

model = KMeans(n_clusters=3, random_state=11)
model.fit(X)
print model.labels_          #Prints TARGET-ARRAYs

iris['Predict_species'] = np.choose(model.labels_, [1, 0, 2]).
astype(np.int64)
iris.to_html('new_IRIS.html', index=False)          #DATA_FRAME in HTML
format
print 'Accuracy: ', accuracy_score(iris.species, iris.Predict_species)*100
print 'Classification Report:
', classification_report(iris.species, iris.Predict_species)

f1 = iris['Predict_species'] == 1
ndata = iris[f1]
ndata.to_csv('1.csv')

f1 = iris['Predict_species'] == 0
ndata = iris[f1]
ndata.to_csv('0.csv')

f1 = iris['Predict_species'] == 2
ndata = iris[f1]
ndata.to_csv('2.csv')

#PLOT DATA
col = ['red', 'blue', 'green']
markers = ['o', 'v', 's']
plt.subplot(2,1,1)
x = iris['sepallength(cm)']
y = iris['sepalwidth(cm)']
plt.xlabel('sepallength(cm)')
plt.ylabel('sepalwidth(cm)')
plt.title('SEPAL')
for i,l in enumerate(model.labels_):
    plt.plot(x[i], y[i], color=col[l], marker=markers[l])

plt.subplot(2,1,2)
x = iris['petallength(cm)']
y = iris['petalwidth(cm)']
plt.xlabel('petallength(cm)')
plt.ylabel('petalwidth(cm)')
plt.title('PETAL')
for i,l in enumerate(model.labels_):
    plt.plot(x[i], y[i], color=col[l], marker=markers[l])

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plt.show()
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