hierarchical\_agglomerative\_clustering

# example code

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| # import list  import matplotlib.pyplot as plt  import pandas as pd  import numpy as np  from scipy.cluster.hierarchy import dendrogram, linkage  import scipy.cluster.hierarchy as shc  from sklearn.cluster import AgglomerativeClustering  # Make test x,y set.  X = np.array([[5,3],[10,15],[15,12],[24,10],[30,30],[85,70],[71,80],[60,78],[70,55],[80,91],])  # test x,y set plt.  labels = range(1,11)  plt.figure(figsize=(10,7))  plt.subplots\_adjust(bottom=0.1)  plt.scatter(X[:,0],X[:,1], label='true position')  for label, x,y in zip(labels, X[:,0],X[:,1]):  plt.annotate(  label,  xy = (x,y), xytext = (-3,3),  textcoords='offset points', ha='right', va='bottom'  )  plt.show()  # test\_set Linkage test and draw result dendrogram in plt.  linked = linkage(X, 'single')  labelList = range(1,11)  plt.figure(figsize=(10,7))  dendrogram(  linked,orientation='top',labels=labelList,  distance\_sort='descending',  show\_leaf\_counts=True,  )  plt.show()  # Read actual Customers dataset from Customers\_Cluster.csv  customer\_data = pd.read\_csv('Customers Cluster.csv')\  # Load customers Age,Income from dataset  data = customer\_data.iloc[:,2:4].values  # Draw dendrogram  plt.figure(figsize=(10,7))  plt.title("customer dendograms")  # Make dendrogram with Linkage  dend = shc.dendrogram(shc.linkage(data, method='ward'))  # Make AgglomerativeClustering model (euclidean method, number of clusters = 5, linkage = ward )  cluster = AgglomerativeClustering(n\_clusters=5, affinity='euclidean',linkage='ward')  # predict customers dataset.  cluster.fit\_predict(data)  # Draw clustering result.  plt.figure(figsize=(10,7))  plt.scatter(data[:,0],data[:,1],c=cluster.labels\_, cmap='rainbow') |

# testing result

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| Test result Image file : next Page. |