Clustering customers based on customer satisfaction and loyalty

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import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
sns.set()
from sklearn.cluster import KMeans

# Loading the data
data = pd.read_csv ('3.12. Example.csv')

# Plotting the data
plt.scatter(data['Satisfaction'],data['Loyalty'])
plt.xlabel('Satisfaction')
plt.ylabel('Loyalty')

# Selecting the features
x = data.copy()

# Clustering
kmeans = KMeans(2)
kmeans.fit(x)

# Clustering results
clusters = x.copy()
clusters['cluster_pred']=kmeans.fit_predict(x)
plt.scatter(clusters['Satisfaction'],clusters['Loyalty'],c=clusters['cluster_pred'],cmap='rainbow')
plt.xlabel('Satisfaction')
plt.ylabel('Loyalty')

# Standardizing the variables
 from sklearn import preprocessing
x_scaled = preprocessing.scale(x)
x_scaled


# Elbow Method
wcss =[]
    kmeans = KMeans(i)
    kmeans.fit(x_scaled)
    wcss.append(kmeans.inertia_)
```

```
wcss

# Plotting # of clusters vs WCSS
plt.plot(range(1,10),wcss)
plt.xlabel('Number of clusters')
plt.ylabel('WCSS')

# Selecting # of clusters after exploring clustering solutions
kmeans_new = KMeans(9)
kmeans_new.fit(x_scaled)
clusters_new = x.copy()
clusters_new['cluster_pred'] = kmeans_new.fit_predict(x_scaled)
Clusters_new

# Plotting to check
plt.scatter(clusters_new['Satisfaction'],clusters_new['Loyalty'],c=clusters_new['cluster_pred'],cmap='rainbow')
plt.xlabel('Satisfaction')
plt.ylabel('Loyalty')
```