Customer Segmentation Project

Introduction

This project involves customer segmentation using K-Means clustering. The goal is to divide customers into distinct groups based on their behavior, which helps businesses to target specific audiences for marketing campaigns.

Dataset Overview

The dataset contains the following fields:

- CustomerID
- Age
- Annual Income (k$)
- Spending Score (1-100)

This data was collected from a shopping mall and is suitable for segmentation analysis.

Python Code

```
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.cluster import KMeans

# Load dataset
df = pd.read_csv('Mall_Customers.csv')

# Select features
X = df[['Annual Income (k$)', 'Spending Score (1-100)']]
```

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```
# Apply KMeans
kmeans = KMeans(n_clusters=5, random_state=42)
df['Cluster'] = kmeans.fit_predict(X)

# Plot clusters
plt.scatter(X['Annual Income (k$)'], X['Spending Score (1-100)'], c=df['Cluster'], cmap='rainbow')
plt.xlabel('Annual Income (k$)')
plt.ylabel('Spending Score (1-100)')
plt.title('Customer Segments')
plt.show()
```

Insights

Based on the clustering results, we identified 5 distinct customer segments. Each group exhibits different spending behavior and income levels. For example, high-income but low-spending customers may require targeted promotions, while high-spending groups are ideal for loyalty programs.

Conclusion

Customer segmentation provides valuable insights for business decision-making. Using K-Means clustering, we effectively grouped customers to help tailor marketing strategies.