# Customer Segmentation using K-means Clustering

This project demonstrates customer segmentation using K-means clustering on retail data. The process includes data cleaning, preprocessing, clustering, and visualization.

### 1. Data Cleaning and Preprocessing

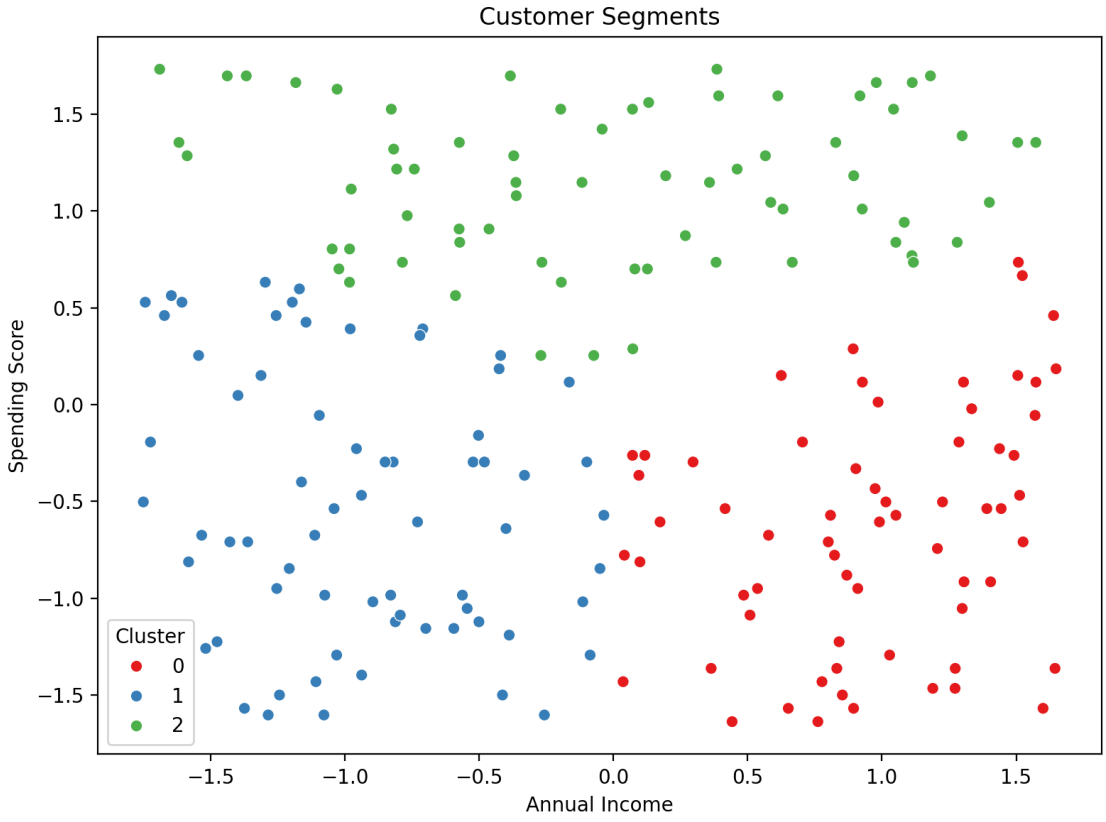
The dataset contains customer IDs, annual income, and spending scores. Features were standardized to ensure fair clustering.

### 2. K-means Clustering

K-means clustering was applied to segment customers into three groups based on their annual income and spending score.

### 3. Visualization of Results

The scatter plot below shows the resulting customer segments. Each color represents a different cluster.



## 4. Sample of Clustered Data

| CustomerID | Annual Income | Spending Score | Cluster |
|---|---|---|---|
| 1 | 0.07166284484866386 | -0.2619086782590005 | 0 |
| 2 | 1.2731979034081318 | -1.3625098213040447 | 0 |
| 3 | 0.808813652248642 | -0.5714527497404192 | 0 |
| 4 | -0.0986135428163258 | -0.2963024639791581 | 1 |
| 5 | -1.7231475819332784 | -0.1931211068186852 | 1 |
| 6 | 0.07150067686041149 | 1.5265681791891967 | 2 |
| 7 | -1.0299118657520425 | -1.2937222498637295 | 1 |
| 8 | -1.1070713945625208 | -1.4312973927443602 | 1 |
| 9 | 0.4854831172710644 | -0.9841781783823108 | 0 |
| 10 | -1.5175510064269224 | -1.259328464143572 | 1 |

This segmentation can help businesses target specific customer groups with tailored marketing strategies.