Evidence 7 - Customer Segmentation with Machine Learning

Problem Solved

Retail and mall businesses often struggle to understand customer behavior. This project segments customers based on their income and spending score using machine learning, helping businesses tailor marketing strategies and improve targeting.

Project Overview

This project uses the Mall Customer dataset to apply K-Means clustering and group customers into segments based on Annual Income and Spending Score. A scatter plot visualizes these clusters, helping reveal patterns in customer behavior. The model can be integrated into a dashboard or app to enable interactive analysis.

Technologies and Tools Used

- Python (Jupyter Notebook)
- Pandas, Scikit-learn, Matplotlib
- KMeans clustering (unsupervised learning)
- Customer segmentation and scatter plot visualization

Key Features

- Loads and processes real customer data
- Applies K-Means clustering to group customer types
- Visualizes distinct segments based on income and spending
- Supports business insight for targeted marketing

My Role

I independently cleaned and processed the dataset, selected clustering features, applied the machine learning algorithm, and visualized the customer groups using a custom scatter plot. I wrote all the code and logic to support segmentation and interpretation.

Impact

This project demonstrates my ability to use unsupervised machine learning for business insight. It shows I can handle customer-level data, build interpretable models, and visualize results in a way that supports decision-making. It strengthens my portfolio as a data-driven innovator.

Segmentation Result Screenshot: