

Project Overview

Title: Credit Card Customer Segmentation using K-Means Clustering

Objective:

To group customers into different segments based on their spending and transaction patterns.

Goal:

Help businesses understand customer behavior and create personalized marketing strategies.

Tools & Data Used

- **Dataset:** Credit Card Customer Data.csv
- **Libraries Used:**
- **Pandas, NumPy** – data cleaning and processing
- **Matplotlib, Seaborn** – visualization
- **Scikit-learn** – clustering & evaluation
- **PCA** – dimensionality reduction for visualization
- **Preprocessing Steps:**
- Dropped unnecessary columns
- Scaled numerical features using **StandardScaler**

Model & Evaluation

- **Algorithm:** K-Means Clustering
- **Process:**
- Tested clusters from **$k = 2$ to 6**
- Evaluated each using **Silhouette Score**
- Selected the best number of clusters based on highest score
- **Best Result:**
Best $k = 2$
Silhouette Score = 0.57

Insights & Visualization

