

Architecture

Mall Customer Segmentation

Abstract

Shopping centers are always looking for ways to increase customers coming to their stores and making purchases to make profits in a huge margin. The first step to increasing profit would be to analyze the existing customers and understand their pattern of behavior and spending habits so as to target the right customers and to make their visit to the shopping centers frequent.

Machine Learning can help in this matter by grouping customers into different segments based on their spending habit. This project is done to help businesses understand their customers and apply marketing strategies and offers to the targeted customers. K-means clustering is done as a way of grouping customers into various segments

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1. Introduction

The purpose of this document is to present a detailed description of the credit card default prediction system. It covers the purposes and features of the system and how the system performs the actions

To create a solution to find groups of customers based on their spending behavior and annual income to target specific group of people and apply marketing strategies to shop more.

1.1 Scope

The mall customer segmentation uses a clustering algorithm to group customers with similar spending behavior and income. This helps to target specific groups of people and apply strategic techniques on them to spend and visit their stores.

2. Technical specifications

2.1 Dataset

The dataset used for the study consists of 200 rows of data and 5 columns which relate to mall customers.

CustomerId	Gender	Age	Annual Inc	Spending Score (1-100)
1	Male	19	15	39
2	Male	21	15	81
3	Female	20	16	6
4	Female	23	16	77
5	Female	31	17	40
6	Female	22	17	76
7	Female	35	18	6
8	Female	23	18	94
9	Male	64	19	3
10	Female	30	19	72

2.2 Prediction

The system prompts the user to input the data related to the customer like their annual income and spending score (1-100). After the information has been loaded, the system will output the prediction of which group the customer belongs to.

2.3 Logging

The system logs all the steps so that the user will be aware of the processes working internally. The type of logging chosen for each depends upon the type of operation that is carried out like info, critical, debug or warning logging. Logging helps to debug issues, so it is a mandatory step

2.4 Deployment

The machine learning model will be deployed as an API using FastAPI

3. Proposed Solution

The proposed solution is to build a clustering algorithm to group customers with income and spending scores.

4. Model Training workflow

K-means clustering was used as a means to find groups of customers so that the mall can target specific people and the marketing team can plan strategies accordingly

