

MARKET SEGMENTATION USING K-MEANS CLUSTERING

MACHINE LEARNING - UE21EC352B

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CONTENT

01

INTRODUCTION

02

DATASET USED

03

TOOLKITS AND ALGORITHMS USED

04

METHODOLOGY

05

CODE AND CORRESPONDING OUTPUTS

06

DEPLOYMENT

07

OUTPUT

08

CONCLUSION

INTRODUCTION

In today's dynamic market landscape, understanding customer behaviour is crucial for business success. Market segmentation is a customer-centric approach that groups individuals with similar characteristics, needs, and behaviours. By segmenting the market, companies create distinct customer profiles, allowing them to develop targeted strategies for each group.

Companies can use this knowledge to craft targeted marketing messages, **prioritize features for new products that resonate with specific groups**, and **develop pricing strategies that maximize value for both budget-conscious and premium customers**. This leads to increased campaign effectiveness and return on investment (ROI).



DATASET USED

The sample Dataset summarizes the usage behaviour of about **9000 active credit card holders** during the last 6 months. The file is at a customer level with **17 behavioural variables** (not including Customer ID).

([MarketSegmentation/Customer Data.csv at main · pik1989/MarketSegmentation \(github.com\)](#))

Variables (columns) of Dataset:

- Balance
- Balance Frequency
- Purchases
- One-off Purchases
- Instalment Purchases
- Cash Advance
- Purchases Frequency
- One-off Purchases
- Frequency Purchases Instalments Frequency
- Cash Advance Frequency
- Cash Advance TRX
- Purchases TRX
- Credit Limit
- Payments
- Minimum Payments
- PRC Full payment
- Tenure



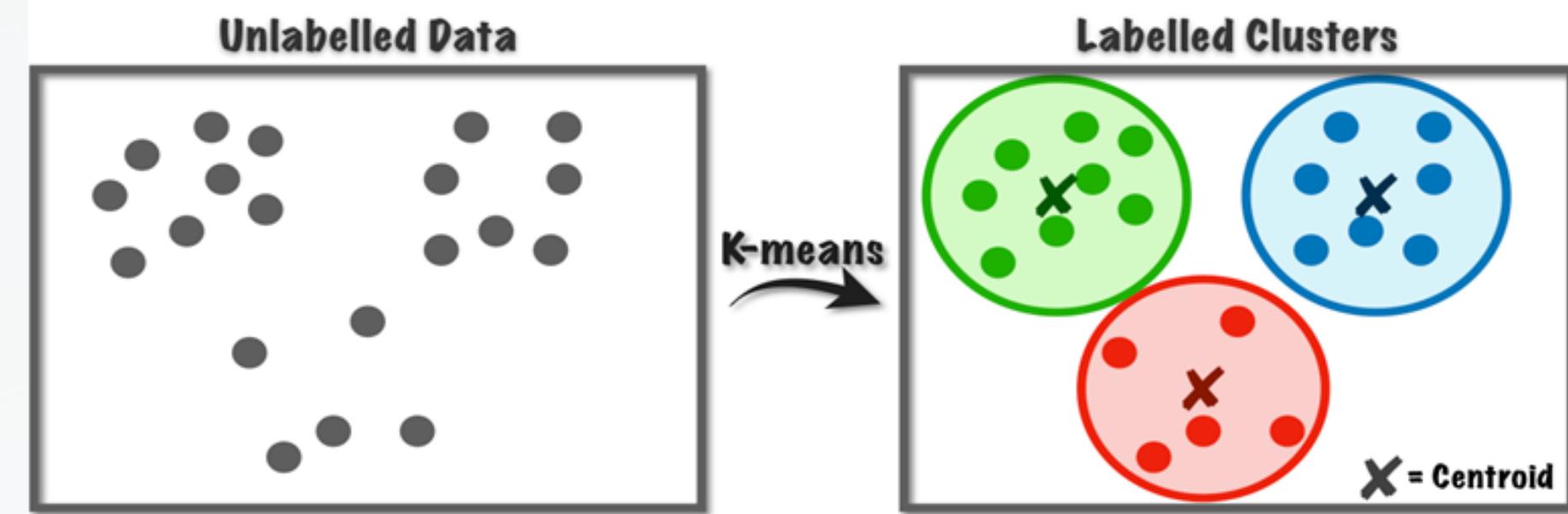
TOOLKITS AND ALGORITHMS USED

Toolkits Used:

- **Python:** Python is the programming language which is used to code the project. Various algorithms used are coded in Python
- **Streamlit:** Streamlit is an open source framework for Machine learning and Data Science. It is used for prototype and deployment purpose of the models.

Algorithm Used: K-Means Clustering

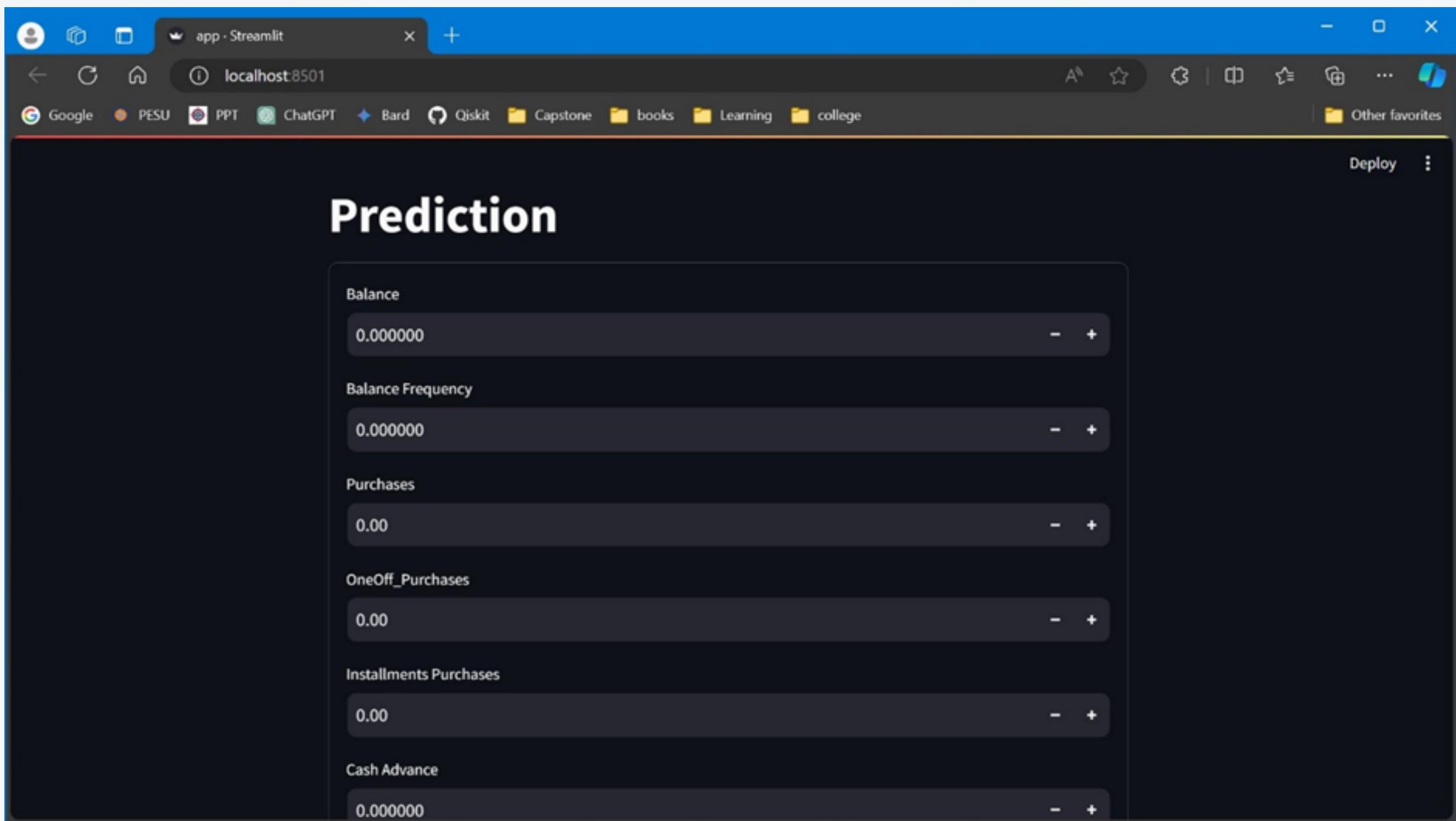
K-Means Clustering is an unsupervised learning algorithm. It identifies inherent groupings within the data. First, we define the desired number of customer segments (k). The algorithm then iteratively assigns data points to the closest of k randomly chosen cluster centres. It recalculates the centre of each cluster based on its assigned points and repeats the assignment process until the assignments stabilize. This results in k distinct clusters, each representing a customer segment with similar features.



METHODOLOGY



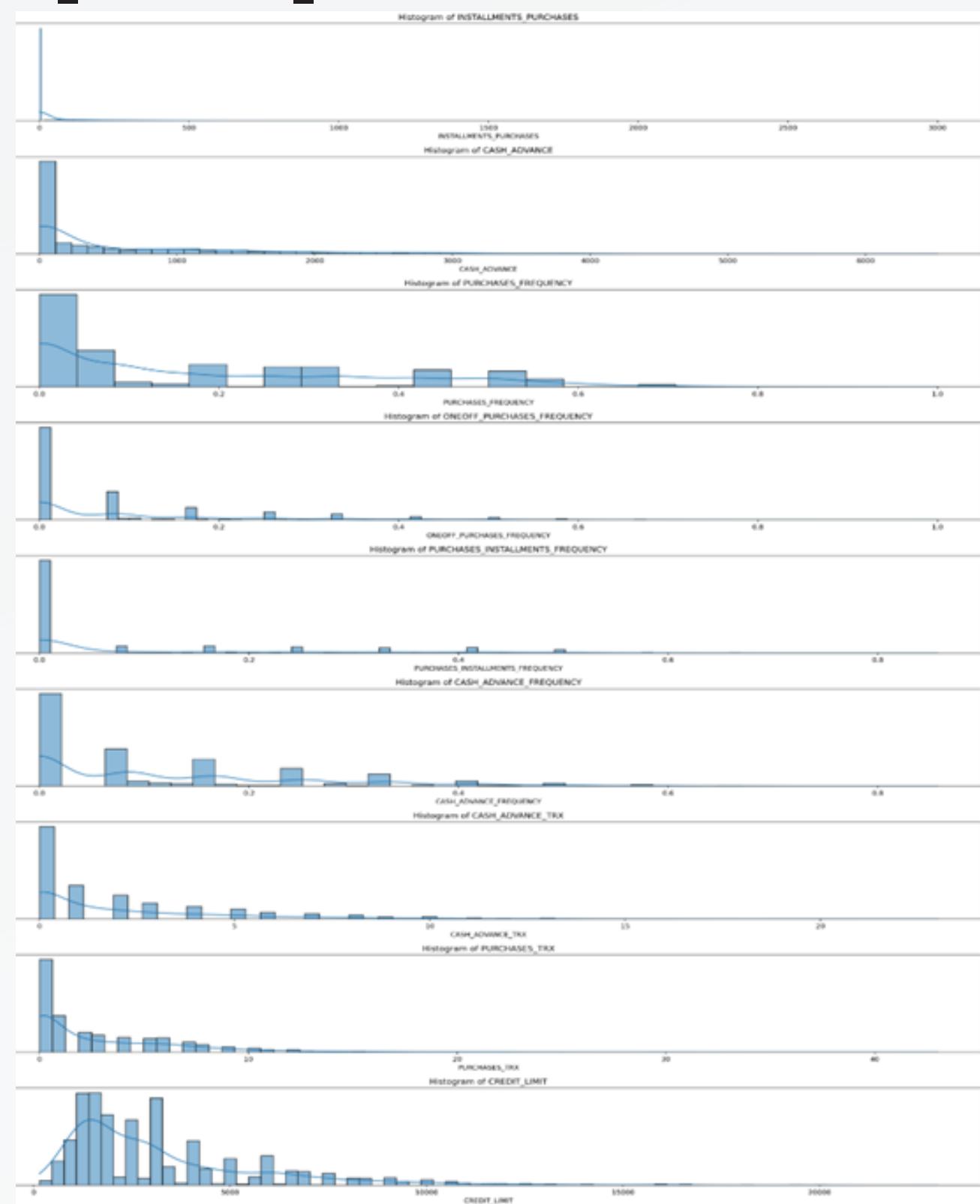
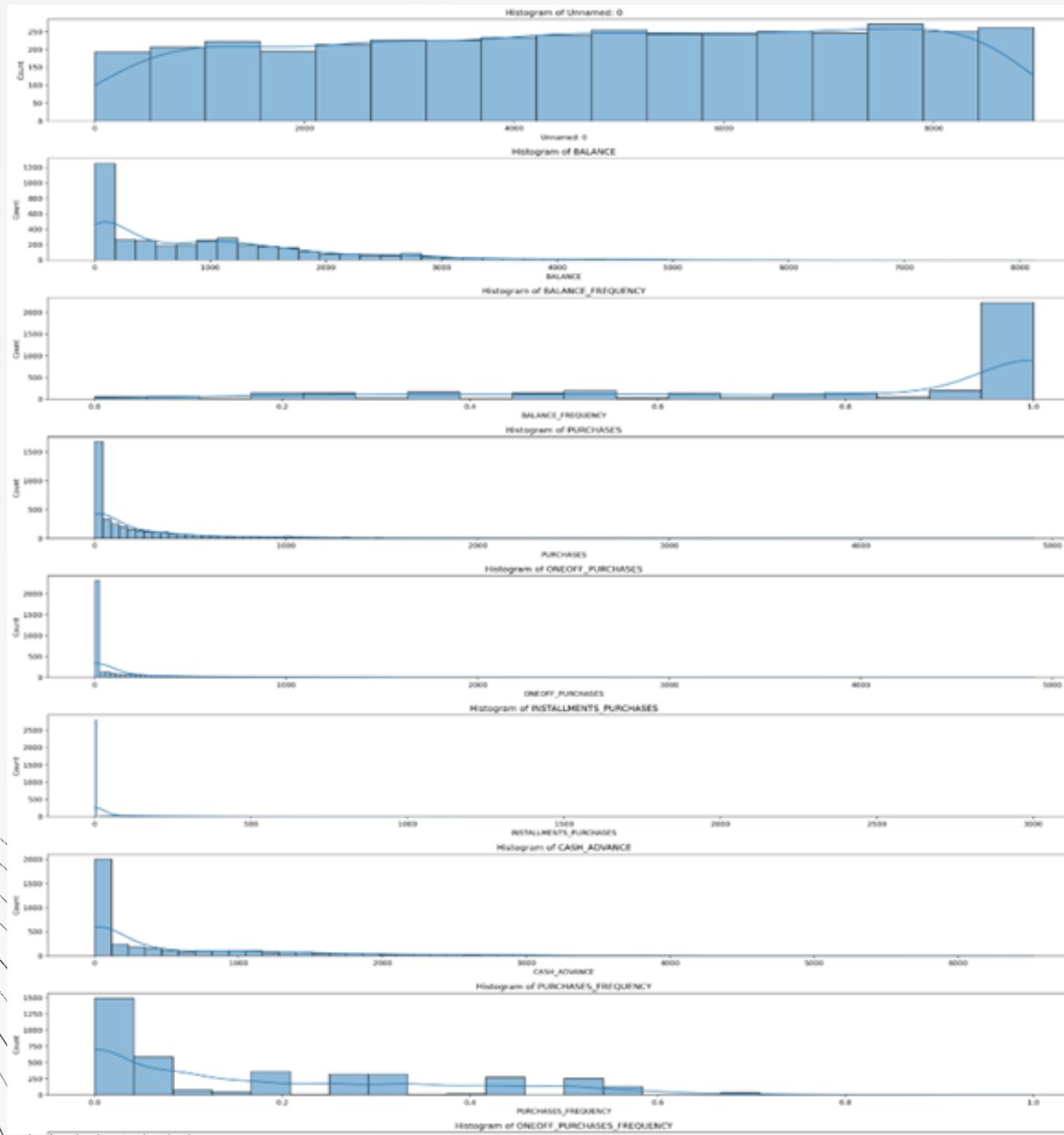
OUTPUT AFTER DEPLOYMENT



OUTPUT AFTER DEPLOYMENT

CASE 1: Upon entering values identical to those in Clustered_Customer_Data.csv:

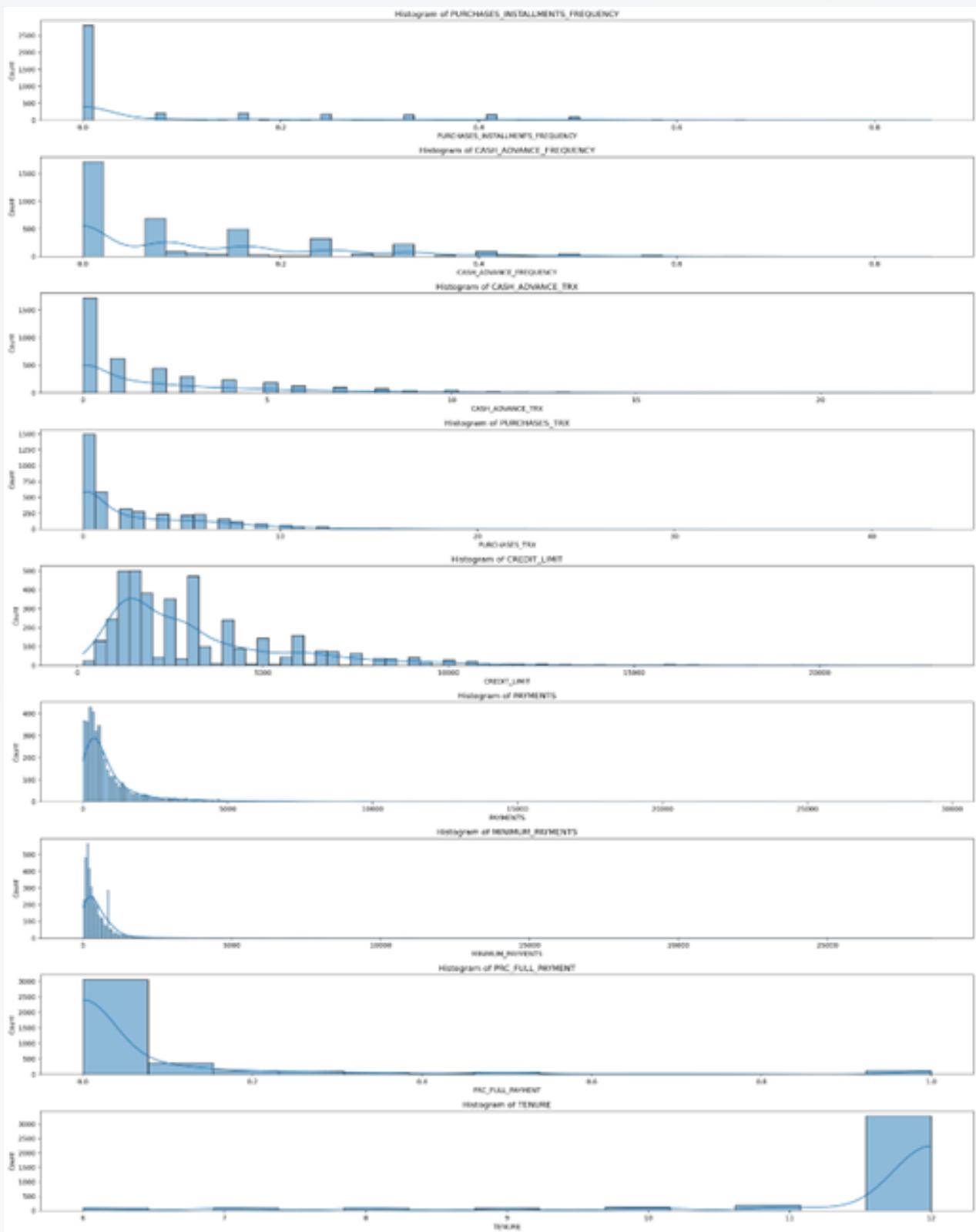
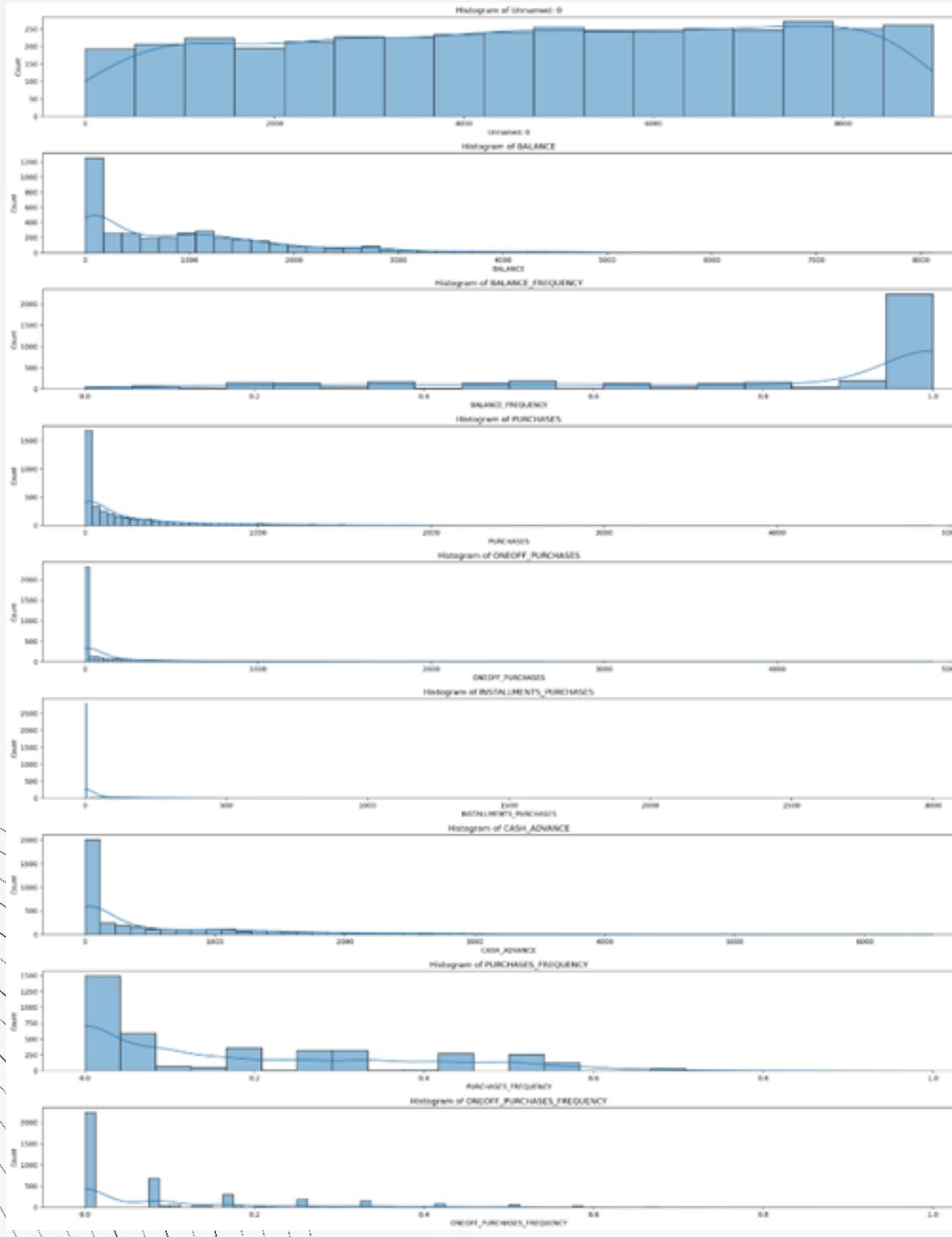
Data Belongs to Cluster 2



OUTPUT AFTER DEPLOYMENT

CASE 2: Changing a few of these values so that the expected output remains ‘Cluster 2’

Data Belongs to Cluster 2



Therefore, as seen,
Expected output = Cluster 2
Predicted Output = Culster 2

CONCLUSION

Successfully created an unsupervised learning model for Market Segmentation using K – Means Clustering in Python and successfully deployed it using a Streamlit Application.

An accuracy of
94.1899 %
was achieved.

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THANK YOU

