**Selected Project: E-commerce Customer Segmentation and Prediction**

Develop a robust customer segmentation model and a predictive classifier to categorize customers based on their purchasing patterns. This will enable the company to tailor marketing strategies, improve customer retention, and optimize inventory management.

[**Click here for Dataset Link**](https://bostoninstituteofanalyti399-my.sharepoint.com/:f:/g/personal/projects_bostoninstituteofanalytics_org/ElHGGpRfRlpLuw11aT2qFbEB-wEy_kFUOYX7aYJghpBj9w?e=dN9MIQ)

**Project Overview:**

This project aims to enhance marketing strategies and customer retention for an e-commerce company by gaining a deeper understanding of their customer base based on their purchasing patter. By leveraging machine learning, the project seeks to segment customers and predict future purchasing behavior. The goal is to develop a robust customer segmentation model and a predictive classifier to categorize customers based on their purchasing patterns, enabling the company to tailor marketing strategies, improve customer retention, and optimize inventory management.

**Project Benefits:**

* **Enhanced Customer Segmentation**: Identify and categorize customers based on purchasing behavior, allowing for targeted marketing strategies.
* **Cost Efficiency**: Focus marketing efforts on high-value customer segments, optimizing resource allocation.
* **Improved Customer Satisfaction**: Tailor offers and communication to specific customer needs, enhancing overall satisfaction.

**Deliverables:**

* A documented machine learning model specifically designed for e-commerce customer segmentation.
* An interactive dashboard or report visualizing the model's performance, key insights, and customer segments.
* A comprehensive explanation of the model, feature importance, and data preprocessing steps.

**Project Guidelines:**

* **Research Methodology**: Conduct thorough exploratory data analysis to understand customer behavior and purchasing patterns. Implement and compare the performance of multiple segmentation algorithms.
* **Model Selection**: Evaluate various clustering methods such as K-means, hierarchical clustering, and DBSCAN to identify the most effective customer segments.
* **Feature Engineering**: Analyze the importance of different customer attributes, such as purchase frequency, recency, and monetary value, in driving segmentation.
* **Report Structure**: Document the entire process, including code, results, and key decisions taken. Prepare a final presentation showcasing findings and recommendations.
* **Actionable Recommendations**: Provide insights on the most important customer segments and suggest strategies for targeted marketing and customer retention.

**Submission:**

* Submit Jupyter notebook (.ipynb) containing data analysis, preprocessing steps, and model training.
* Submit final report as .docx or PowerPoint Presentation.
* (Optional) Submit Power BI or Tableau dashboard visualizing churn patterns and model performance.
* Include the trained model file in the submission.
* NOTE: Create a zip file of the above mentioned items for the final submission.