-CAPSTONE 2 PROJECT PROPOSAL-

Optimizing Customer Segmentation and Marketing Strategies Through Advanced Clustering Techniques

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Introduction:
Understanding and anticipating customer purchasing behavior is critical for improving user experience and optimizing inventory management in e-commerce platforms. By leveraging customer segmentation we will provide actionable insights to enhance marketing strategies. The project will employ various data science methodologies including clustering and classification models.

Problem Statement:
The objective is to build predictive models capable of identifying distinct customer segments based on several key features of the data as well as user purchase frequency.. These models will enable Instacart to tailor their marketing strategies, and be able to identify with their customer base better going forward..

Context:
This project is situated within the broader scope of e-commerce and data science applications. Predictive modeling of customer behavior can significantly impact business decisions and marketing strategies, leading to enhanced customer satisfaction and operational efficiency. The Instacart dataset provides a rich source of information for developing these predictive models.

Criteria for Success:

1. **Model Segmentation:** Be able to clearly define the customer groups based on the criteria defined within our features and give each customer group its own identity and unique identity.
2. **Performance Improvement:** Be able to make key marketing recommendations for each customer group based on their new identity, tailored for each one..
3. **Stakeholder Satisfaction:** Deliver insights and results that meet the needs and expectations of key stakeholders.

Scope of Solution Space:

1. **Customer Segmentation:** Focus on developing models that accurately segment customers based on purchasing behavior.
2. **Promotional Marketing:** Once segmented, test created promotions on each cluster for varying degrees of success.

Constraints within the Solution Space:

1. **Data Limitations:** The quality and completeness of the Instacart dataset may impose constraints on the model's performance.
2. **Computational Resources:** The availability of computational resources may limit the complexity of models and the extent of hyperparameter tuning.
3. **Time Constraints:** Project timelines may affect the depth of analysis and the extent of model optimization.
4. **Implementation Constraints:** Practical considerations for deploying the models in real-world scenarios may impose additional constraints.

Key (Potential) Stakeholders:

1. **E-commerce Platforms:** Companies like Instacart that rely on accurate demand forecasting and personalized recommendations.
2. **Data Scientists and Analysts:** Professionals who will use the insights and methodologies developed in this project.
3. **Business Decision Makers:** Executives and managers who will leverage the predictive models for strategic decisions.
4. **Customers:** End-users who will benefit from improved recommendations and shopping experiences.

Data Sources:
Kaggle(Instacart Market Basket Analysis)
https://www.kaggle.com/c/instacart-market-basket-analysis/data