**Project Initialization and Planning Phase**

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| Date | 07-07-2024 |
| Team ID | 740299 |
| Project Title | Customer Shopping Segmentation by using Machine learning |
| Maximum Marks | 3 Marks |

**Project Proposal (Proposed Solution) report**

We propose implementing a Machine learning based Customer Segmentation system to boost efficiency and accuracy. This will analysis personalized marketing, optimize inventory management and improve customer satisfaction by analyzing features.

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| **Project Overview** |  |
| Objective | Utilize machine learning to achieve precise customer segmentation for personalized marketing and optimized inventory, enhancing customer satisfaction and driving business growth. |
| Scope | The project Implement a machine learning system to analyze customer data for accurate segmentation, enabling personalized marketing and efficient inventory management across all shopping malls. |
| **Problem Statement** |  |
| Description | Current customer segmentation lacks accuracy and efficiency, hindering personalized marketing and optimal inventory management in shopping malls. Implementing machine learning can address these challenges and improve overall business outcomes. |
| Impact | Implementing machine learning for customer segmentation in shopping malls enhances precision in targeting and inventory management, leading to improved customer satisfaction . |
| **Proposed Solution** |  |
| Approach | Develop a machine learning model using customer data to segment shoppers. Utilize clustering algorithms like k-means for segmentation and personalize marketing strategies based on identified segments. |
| Key Features |  Gathering comprehensive customer data including demographics, purchase history, and behavior.   Choosing appropriate clustering algorithms for segmenting customers effectively.   Tailoring marketing strategies and inventory management based on identified customer segments to enhance engagement and satisfaction. |

**Resourcs Requirements**

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| **Resource Type** | **Description** | **Specification/Allocation** |
| **Hardware** | | |
| Computing Resources | CPU/GPU specifications, number of cores | T4 GPU |
| Memory | RAM specifications | 8 GB |
| Storage | Disk space for data, models, and logs | 1 TB SSD |
| **Software** | | |
| Frameworks | Python frameworks | Flask |
| Libraries | Additional libraries | scikit-learn, pandas, numpy, matplotlib, seaborn |
| Development Environment | IDE | Jupyter Notebook, pycharm |
| **Data** | | |
| Data | Source, size, format | Kaggle dataset, 614, csv |