**Project Initialization and Planning Phase**

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| Date | 15 March 2024 |
| Team ID | LTVIP2024TMID24785 |
| Project Title | Customer Segmentation Using Machine Learning |
| Maximum Marks | 3 Marks |

**Project Proposal (Proposed Solution) template**

This project proposal outlines a solution to address a specific problem. With a clear objective, defined scope, and a concise problem statement, the proposed solution details the approach, key features, and resource requirements, including hardware, software, and personnel.

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| **Project Overview** | |
| Objective | To leverage Machine Learning algorithms to segment a business’s customer base into distinct groups based on behaviors, preferences, & demographics. It aims to automate customer segmentation, making it scalable, accurate, & actionable for businesses. |
| Scope | The boundaries define the limits of the project regarding time, data sources, technology, and stakeholder involvement.  The extent outlines the key activities and deliverables like data collection & preparation, model development & evaluation. |
| **Problem Statement** | |
| Description | Businesses struggle to effectively understand and engage their diverse customer base due to outdated segmentation methods that rely on basic demographics. This results in generic marketing strategies that fail to resonate with customers, leading to decreased satisfaction and missed opportunities. |
| Impact | The impact of this project extends beyond improved marketing strategies; it will transform how businesses understand and engage with their customers, leading to increased satisfaction, loyalty, and ultimately, profitability. |
| **Proposed Solution** | |
| Approach | Data collection & preprocessing (cleaning & transformation), EDA, feature engineering, model development & evaluation, implementing & reporting. |
| Key Features | Data - Driven insights, dynamic segmentation, personalized customer profiles, integration of multiple data sources, scalability. |

**Resource Requirements**

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| **Resource Type** | **Description** | **Specification/Allocation** |
| **Hardware** | | |
| Computing Resources | CPU/GPU specifications, number of cores | e.g., 2 x NVIDIA V100 GPUs |
| Memory | RAM specifications | e.g., 8 GB |
| Storage | Disk space for data, models, and logs | e.g., 512 GB SSD |
| **Software** | | |
| Frameworks | Python frameworks | e.g., Flask |
| Libraries | Additional libraries | e.g., scikit-learn, pandas, numpy, matplotlib |
| Development Environment | IDE, version control | e.g., Jupyter Notebook, Vscode, Git |
| **Data** | | |
| Data | Source, size, format | e.g., Kaggle dataset, 48 KB Size, CSV format |