**Project Initialization and Planning Phase**

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| **Date** | 11 July 2024 |
| **Team ID** | 740052 |
| **Project Title** | Smart Lender - Applicant Credibility Prediction For Loan Approval |
| **Maximum Marks** | 3 Marks |

**Project Proposal (Proposed Solution) template**

The loan approval prediction project aims to develop a robust machine learning model that accurately predicts the approval or denial of loan applications based on various applicant and loan-specific features. This model will assist financial institutions in reducing default risks and optimizing the loan approval process. By leveraging historical data, the model will provide insights and enhance decision-making efficiency. Ultimately, this project seeks to improve the overall loan approval workflow and ensure fair, data-driven outcomes.

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| **Project Overview** | |
| Objective | The objective of loan approval prediction is to accurately determine whether a loan application should be approved or denied based on applicant and loan-specific features. This helps financial institutions mitigate risk by identifying potentially defaulting loans. Additionally, it streamlines the loan approval process, ensuring efficient and fair decision-making. |
| Scope | The scope of the loan approval prediction project includes data collection and preprocessing, feature engineering, and model development using machine learning techniques. It involves evaluating and fine-tuning the model for accuracy and reliability. The project also covers integrating the model into existing loan processing systems to support automated decision-making. |
| **Problem Statement** | |
| Description | The loan approval prediction project involves creating a machine learning model to predict loan approval outcomes based on applicant and loan-specific features. This model aims to enhance decision-making accuracy and efficiency in the loan approval process for financial institutions. |
| Impact | The loan approval prediction model significantly reduces default risk and operational costs for financial institutions by automating and improving the accuracy of loan approval decisions. It also ensures a fairer and more efficient loan application process for applicants. |
| **Proposed Solution** | |
| Approach | The approach for loan approval prediction involves collecting and preprocessing historical loan data, applying machine learning algorithms to train a predictive model, and validating its performance to ensure reliable decision-making capabilities. |
| Key Features | **Credit Score**: Provides a numerical assessment of the applicant's creditworthiness. Higher scores indicate lower credit risk.  **Income**: Gross income of the applicant, demonstrating the ability to repay the loan.  **Loan Amount**: Total amount requested by the applicant, influencing risk assessment and loan approval decision-making. |

**Resource Requirements**

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| **Resource Type** | **Description** | **Specification/Allocation** |
| **Hardware** | | |
| Computing Resources | CPU/GPU specifications, number of cores | 2 x NVIDIA V100 GPUs |
| 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, pickel, matplotlib, seaborn |
| Development Environment | IDE, version control | Google collab, Vs code |
| **Data** | | |
| Data | Source, size, format | Excel dataset, 40KB,CSV |