**Project Initialization and Planning Phase**

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| Date | 09 July 2024 |
| Team ID | SWTID1720023141 |
| Project Title | Prediction and Analysis of Liver Patient  Data Using Machine Learning |
| Maximum Marks | 3 Marks |

**Project Proposal (Proposed Solution) template**

This proposal aims to enhance liver disease diagnosis and treatment planning using advanced machine learning. By integrating comprehensive liver patient datasets and applying sophisticated predictive models, the project will enable early detection and personalized treatment plans. Key components include data pre processing, feature engineering, model development, and deployment in a user-friendly application. This approach improves clinical decision-making, ensures data security, and complies with healthcare regulations, ultimately enhancing patient outcomes and healthcare efficiency.

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| **Project Overview** | |
| Objective | The primary objective of this project is to leverage machine learning algorithms to enhance the accuracy and efficiency of liver disease diagnosis, prognosis, and treatment planning by analyzing diverse liver patient datasets. |
| Scope | The project comprehensively addresses and enhances the diagnosis and treatment process for liver diseases, incorporating machine learning to create a more robust and efficient system. |
| **Problem Statement** | |
| Description | Current methods of diagnosing and managing liver disease are often reactive, time-consuming, and prone to errors due to the reliance on human expertise and traditional diagnostic tools. There is a critical need for a more proactive, accurate, and efficient approach. |
| Impact | - Earlier and more accurate diagnosis of liver disease.  - Improved patient outcomes through personalized treatment plans.  - Reduced time and effort in data analysis for healthcare professionals.  - Overall improvement in healthcare quality and efficiency. |
| **Proposed Solution** | |
| Approach | Employing machine learning techniques to analyze and predict liver disease outcomes, creating a dynamic and adaptable diagnostic and treatment planning system. |
| Key Features | - Implementation of a machine learning-based liver disease prediction model.  - Real-time data analysis for quicker diagnosis and treatment planning.  - Continuous learning to adapt to evolving medical knowledge and patient data. |

**Resource Requirements**

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| **Resource Type** | **Description** | **Specification/Allocation** |
| **Hardware** | | |
| Computing Resources | CPU/GPU specifications, number of cores | 12th Gen Intel(R) Core(TM)  i5-12450H ,8 Cores,T4 GPU |
| Memory | RAM specifications | 16 GB |
| Storage | Disk space for data, models, and logs | 512 GB SSD |
| **Software** | | |
| Frameworks | Python frameworks | Flask |
| Libraries | Additional libraries | Numpy , Scikit-learn, Pandas,  Matplotlib and Seaborn,  Pickle |
| Development Environment | IDE, version control | Jupyter Notebook(7.0.8),  Google Collab ,  Spyder(Python 3.11) |
| **Data** | | |
| Data | Source, size, format | Kaggle dataset, 583 rows and  11 columns, Text |