**Project Initialization and Planning Phase**

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| Date | 15 March 2024 |
| Team ID | Team-739686 |
| Project Title | Optimizing Sleep Efficiency: Harnessing Machine Learning For Enhances Restorative Rest |
| 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 | The project "Optimizing Sleep Efficacy: Harnessing Machine Learning for Enhanced Restorative Rest" aims to leverage machine learning algorithms to improve the quality and efficiency of sleep for individuals. By analyzing various factors such as sleep patterns, environmental conditions, and lifestyle habits, the system will provide personalized recommendations and interventions to optimize sleep quality and duration. The goal is to enhance restorative rest, promote overall well-being, and mitigate sleep-related issues such as insomnia, sleep apnea and disrupted sleep cycles |
| Scope | The primary objective of this project is to enhance the quality and efficiency of sleep using machine learning techniques, providing personalized recommendations to improve restorative rest. |
| **Problem Statement** | |
| Description | Sleep is crucial for overall health and well-being, yet many individuals struggle to achieve consistent, restorative rest. This project aims to utilize machine learning to analyze sleep patterns, identify disruptions, and provide personalized recommendations to enhance sleep efficiency and quality. By integrating data from various sources and employing advanced analytics, the project seeks to empower users with actionable insights for better sleep. |
| Impact | * Analyze sleep data to uncover patterns and correlations with daily habits and environmental factors. * Develop predictive models that forecast sleep quality based on user behavior and external influences. * Offer tailored advice to users to improve their sleep efficiency and achieve restorative rest. |
| **Proposed Solution** | |
| Approach | 1. Data Collection 2. Data Preprocessing 3. Model Development 4. Model Evaluation 5. Deployment |
| Key Features | 1. Comprehensive Data Collection  2. Advanced Data Analysis |

**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 | Sklearn  Pandas  Numpy  Seaborn  Matplotlib |
| Development Environment | IDE, version control | VSCode |
| **Data** | | |
| Data | Source, size, format | Kaggle dataset, 451 records |