**Project Initialization And Planning Phase**

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| Date | 15 November 2024 |
| Team ID | 739909 |
| Project Name | Unlocking the Minds: Analyzing Mental Health with NLP |
| Maximum Marks | 3 Marks |

**Project Proposal (Proposed Solution) report:**

We propose leveraging Natural Language Processing (NLP) techniques to analyze textual data from diverse sources related to mental health. The system will process and analyze data in real time, offering actionable insights into mental health conditions while ensuring privacy and ethical standards are maintained.

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| **Project Overview** | | | |
| Objective | Develop a Natural Language Processing (NLP)-based system to analyze and extract insights from textual data related to mental health, enabling enhanced understanding, support, and intervention. | | |
| Scope | Advance research by identifying linguistic markers associated with mental health conditions.  Enhance therapeutic practices by enabling therapists to gain deeper insights into patient needs.  Improve mental health advocacy through the analysis of sentiments expressed on public platforms. | | |
| **Problem Statement** | | | |
| Description | | Mental health is a multifaceted issue often burdened by stigma, making it challenging to understand and address. Current methods lack the ability to capture nuanced linguistic patterns in textual data that could provide critical insights into mental health dynamics. | |
| Impact | | Better understanding of mental health conditions through scalable analysis of textual data.  Enhanced clinical practices by supporting evidence-based, personalized interventions.  Empowered mental health advocacy by identifying community needs and trends. | |
| **Proposed Solution** | | | |
| Approach | | | Utilize advanced NLP techniques to analyze diverse sources of text—such as social media, therapy transcripts, and academic papers—to detect linguistic markers, emotional patterns, and topics related to mental health. |
| Key Features | | |  **Sentiment Analysis**: Extract sentiments and emotional patterns expressed in text.   **Linguistic Pattern Recognition**: Identify recurring themes, struggles, and markers of mental health conditions.   **Topic Modeling**: Discover dominant topics in mental health discussions.   **Multi-Source Integration**: Analyze text from social media, clinical settings, and academic research. |

**Resource 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, nltk, re, joblib. |
| Development Environment | | | IDE | | | | Jupyter Notebook |
| **Data** | | | | | | | |
| Data | | | | Source, size, format | Kaggle dataset, 12,803KB, .csv | | |