Project Initialization And Planning Phase

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.

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

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