Project Initialization and Planning Phase

Date	8 July 2024
Team ID	SWTID1720075414
Project Title	Panic Disorder Detection
Maximum Marks	3 Marks

Project Overview	
Objective	Developing a real-time, accurate, and reliable system for early detection and monitoring of panic disorder using multimodal physiological signals and machine learning.
Scope	The scope of this project involves developing an automated detection system for panic disorder using machine learning techniques. This includes collecting comprehensive datasets on various factors such as personal and medical history, symptoms, and lifestyle. The data will be preprocessed and feature engineering will be performed. Machine learning models will be trained, optimized, and evaluated using metrics like accuracy, F1 score, recall and confusion matrix. The project will implement a user-friendly interface, validate and test the system, and deploy it for real-world evaluation.
Problem Statement	
Description	The project addresses the challenge of accurately diagnosing panic disorder, which relies on subjective reports and often leads to mis diagnosis. It aims to develop a real-time detection system using physiological signals and machine learning for timely, accurate identification and better management of the disorder.

Impact	Some of the important impacts that this project provides include: **1. Improved Patient Outcomes:** Early and accurate detection enables timely intervention, reducing the severity and frequency of panic attacks, and improving overall mental health and quality of life for patients. **2. Enhanced Treatment Efficiency:** Objective data-driven insights allow healthcare providers to tailor treatment plans more effectively, leading to better management of the disorder. **3. Reduced Healthcare Costs:** Early detection and accurate diagnosis can prevent unnecessary medical tests and treatments, reducing overall healthcare costs and resource utilization. **4. Increased Access to Care:** Real-time monitoring and remote diagnostics can make mental health care more accessible, especially for those in underserved or remote areas. **5. Decreased Stigma:** An objective diagnostic tool can help reduce the stigma associated with panic disorder by providing a clear, data-based understanding of the condition. **6. Research and Development:** The collected data can be used for further research into panic disorder, potentially leading to new insights and advancements in treatment.
Proposed Solution	
Approach	The detailed Methodology used as a solution for this project include: 1. Data Collection 2. Data Preprocessing 3. Model Development 4. Model Monitoring and Analysis 5. User Interface Development
Key Features	Some of the unique aspects of this mode of project development include: 1. User-Centric Design 2. Adequate Monitoring 3. High Accuracy

Resource Requirements

Resource Type	Description	Specification/Allocation
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	Intel Core i7, Apple M1 NVIDIA GeForce RTX 3060 Laptop GPU
Memory	RAM specifications	8 - 16 GB
Storage	Disk space for data, models, and logs	512 GB SSD
Software		
Frameworks	Python frameworks	Flask
Libraries	Additional libraries	Numpy, pandas, matplotlib, sklearn, xgboost, pickle, matplotlib.pyplot, seaborn
Development Environment	IDE, version control	Jupyter Notebook, Git, Spyder, Visual Studio Code
Data		
Data	Source, size, format	Kaggle dataset,12000 records, .csv format https://www.kaggle.com/datasets/muhammadshahidazeem/panic-disorder-detection-dataset