PANIC DISORDER DETECTION

Milestone 1: Project Initialization and Planning Phase

The "Project Initialization and Planning Phase" marks the project's outset, defining goals, scope, and stakeholders. This crucial phase establishes project parameters, identifies key team members, allocates resources, and outlines a realistic timeline. It also involves risk assessment and mitigation planning. Successful initiation sets the foundation for a well-organized and efficiently executed machine learning project, ensuring clarity, alignment, and proactive measures for potential challenges.

Activity 1: Define Problem Statement
Panic disorder is a debilitating mental health condition characterized by recurrent and unexpected panic attacks, which can significantly impair an individual's daily functioning and quality of life. Despite its prevalence, panic disorder often goes undiagnosed or is misdiagnosed due to the overlap of its symptoms with other medical and psychiatric conditions. Early and accurate detection is crucial for effective treatment and better patient outcomes+

Problem Statement Report: [Click Here](#)

Activity 2: Project Proposal (Proposed Solution)
This project aims to develop a system for the early detection of panic disorder using advanced data analysis and machine learning techniques. The goal is to provide healthcare professionals with a tool to identify symptoms and predict the likelihood of panic disorder in patients, thereby enabling timely and effective intervention.

Project Proposal Report: [Click Here](#)

Activity 3: Initial Project Planning
Planning a project for detecting panic disorder using machine learning, specifically a random forest model, involves several crucial steps. First, clearly define the objectives and scope, specifying the types of data needed, the target audience, and the expected outcomes. Conduct a thorough literature review to understand existing research on panic disorder detection, identifying commonly used features and methodologies.
Project Planning Report: [Click Here](#)

Milestone 2: Data Collection and Preprocessing Phase

The Data Collection and Preprocessing Phase involves executing a plan to gather relevant Panic

Disorder Detection data from Kaggle, ensuring data quality through verification and addressing missing values. Preprocessing tasks include cleaning, encoding, and organizing the dataset for subsequent exploratory analysis and machine learning model development.

Activity 1: Data Collection Plan, Raw Data Sources Identified, Data Quality Report

To develop a machine learning model for panic disorder detection, a comprehensive data collection plan is essential. This involves defining the scope of the study, identifying the population of interest, and selecting appropriate data sources such as Electronic Health Records (EHRs), patient surveys, wearable devices, genomic data, and social media forums.

Data Collection Report: [Click Here](#)

Activity 2: Data Quality Report

A data quality report for panic disorder detection focuses on several key aspects to ensure the reliability and accuracy of the dataset. Completeness is assessed by checking for missing entries in Electronic Health Records
Data Quality Report: [Click Here](#)

Activity 3: Data Exploration and Preprocessing

In panic disorder detection, data exploration and preprocessing are critical steps to prepare the dataset for machine learning models. During data exploration, various statistical analyses and visualizations are performed to understand the distribution, patterns, and relationships within the data.
Data Exploration and Preprocessing Report: [Click Here](#)

Milestone 3: Model Development Phase

The Model Development Phase entails crafting a predictive model for patient condition. It encompasses strategic feature selection, evaluating and selecting models (Random Forest classifier , Decision Tree classifier, Support vector classifier), initiating training with code, and rigorously validating and assessing model performance for informed decision-making in the lending process.

Activity 1: Feature Selection Report

The Feature Selection Report outlines the rationale behind choosing specific features (e.g., age, current stressors, coping mechanisms) for the business bankruptcy model. It evaluates relevance, importance, and impact on predictive accuracy, ensuring the inclusion of key factors influencing the model's ability to predict the patient condition.

Feature Selection Report: [Click Here](#)

Activity 2: Model Selection Report

The Model Selection Report details the rationale behind choosing Random Forest classifier, Decision Tree, support vector classifier models for business bankrupt prediction. It considers each model's strengths in handling complex relationships, interpretability, adaptability, and overall predictive performance, ensuring an informed choice aligned with project objectives.

Model Selection Report: Click Here

Activity 3: Initial Model Training Code, Model Validation and Evaluation Report

The Initial Model Training Code employs selected algorithms on the Panic Disorder Detection dataset, setting the foundation for predictive modeling. The subsequent Model Validation and Evaluation Report rigorously assesses model performance, employing metrics like accuracy and precision to ensure reliability and effectiveness in predicting symptoms.

Model Development Phase Template: Click Here

Milestone 4: Model Optimization and Tuning Phase

The Model Optimization and Tuning Phase involves refining machine learning models for peak performance. It includes optimized model code, fine-tuning hyperparameters, comparing performance metrics, and justifying the final model selection for enhanced predictive accuracy and efficiency.

Activity 1: Hyperparameter Tuning Documentation

The Randomforest model was selected for its superior performance, exhibiting high accuracy during hyperparameter tuning. Its ability to handle complex relationships, minimize overfitting, and optimize predictive accuracy aligns with project objectives, justifying its selection as the final model.

Activity 2: Performance Metrics Comparison Report

The Performance Metrics Comparison Report contrasts the baseline and optimized metrics for various models, specifically highlighting the enhanced performance of the Randomforest model. This assessment provides a clear understanding of the refined predictive capabilities achieved through hyperparameter tuning.

Activity 3: Final Model Selection Justification

The Final Model Selection Justification articulates the rationale for choosing Randomforest as the ultimate model. Its exceptional accuracy, ability to handle complexity, and successful hyperparameter tuning align with project objectives, ensuring panic disorder detection predictions.

Model Optimization and Tuning Phase Report: Click Here

Milestone 5: Project Files Submission and Documentation

For project file submission in Git hub, Kindly click the link and refer to the flow. **Click Here**

For the documentation, Kindly refer to the link. **Click Here**

Milestone 6: Project Demonstration

In the upcoming module called Project Demonstration, individuals will be required to record a video by sharing their screens. They will need to explain their project and demonstrate its execution during the presentation.