PANIC DISORDER DETECTION

Team ID - SWTID1720243396

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

Problem Statement: People with panic detection disorder experience intense and debilitating episodes of fear or discomfort that come on abruptly and reach their peak within minutes (panic attacks). These attacks are often accompanied by physical symptoms like chest pain, shortness of breath, dizziness, or feeling faint, which can be terrifying and lead to a fear of future attacks. This constant fear can significantly impact their daily lives, causing them to avoid places or situations where they've had panic attacks in the past, limiting their social interactions, work performance, and overall well-being.

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Activity 2: Project Proposal (Proposed Solution)

The methodology and techniques for panic disorder detection will depend on the project's goals (prediction vs real-time detection). Here's a general outline for each approach: -

1. Data collection and preparation
2. Exploratory Data Analysis
3. Model Building
4. Performance Testing and Hyperparameter Tuning

5. Model Deployment

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Activity 3: Initial Project Planning

Initial Project Planning involves outlining key objectives, defining scope, and identifying stakeholders for a loan approval system. It encompasses setting timelines, allocating resources, and determining the overall project strategy. During this phase, the team establishes a clear understanding of the dataset, formulates goals for analysis, and plans the workflow for data processing. Effective initial planning lays the foundation for a systematic.and well-executed project, ensuring successful outcomes.

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Milestone 2: Data Collection and Preprocessing Phase

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

The dataset for “PANIC DISORDER DETECTION" is sourced from Kaggle . It includes applicant details and mental health metrics. Data quality is ensured through verification, addressing missing values, and maintaining adherence to ethical guidelines, establishing a reliable foundation for predictive modeling.

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Activity 2: Data Quality Report

The dataset for “PANIC DISORDER DETECTION" is sourced from Kaggle. The Data Quality Report Template will summarize data quality

issues from the selected source, including severity levels and resolution plans. It will aid in systematically identifying and rectifying data discrepancies.

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Activity 3: Data Exploration and Preprocessing

Elevate your data strategy with the Data Collection plan and the Raw Data Sources report, ensuring meticulous data curation and integrity for informed decision-making in every analysis and decision-making endeavor.

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Milestone 3: Model Development Phase

The Model Development Phase entails crafting a predictive model. It encompasses strategic feature selection, evaluating and selecting models (Multiple Layer Perceptron, Naive Bayes, Gradient Boosting, Extra Trees, AdaBoost, KNN, SVM, Random Forest), initiating training with code, and rigorously validating and assessing model performance for informed decision-making in the lending process.

Activity 1: Model Selection Report

The Model Selection Report details the rationale behind choosing Random Forest SVM (linear) and KNN. It considers each model's strengths in handling complex relationships, interpretability, adaptability, and overall predictive performance, ensuring an informed choice aligned with project objectives.

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Activity 2: Initial Model Training Code, Model Validation and Evaluation Report

The initial model training code will be showcased in the future through a screenshot. The model validation and evaluation report will include classification reports, accuracy, and confusion matrices for multiple models, presented through respective screenshots

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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 Gradient Boosting 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.

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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 Gradient Boosting model. This assessment provides a clear understanding of the refined predictive capabilities achieved through hyperparameter tuning.

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Activity 3: Final Model Selection Justification

The Final Model Selection Justification articulates the rationale for choosing Gradient Boosting as the ultimate model. Its exceptional accuracy, ability to handle complexity, and successful hyperparameter tuning align with project objectives, ensuring optimal loan approval predictions.

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Milestone 5: Project Files Submission and Documentation

For project file submission in GitHub, 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

For Files related to development Click here - Click Here
For Video Demonstration, kindly click this Gdrive link - Click Here