Frappe Activity:Mobile Phone Activity Classification

Milestone 1: Project Initialization and Planning Phase

The purpose of this milestone is to lay the groundwork for the mobile phone activity classification project. This phase focuses on clearly defining the problem, proposing a viable solution, and planning the project's execution. By the end of this milestone, the project should have a well-defined scope, a clear set of objectives, and a detailed plan to guide subsequent development and implementation phases.

Activity 1: Define Problem Statement click here

The blurring of boundaries between personal and professional mobile app usage leads to work-life imbalance, productivity challenges, and data security risks. This project aims to develop a machine learning model to classify app usage into home, work, or unknown categories, enhancing user management of time and activities.

Project Statement Report: click here

Activity 2: Project Proposal (Proposed Solution)

Project Proposal: The proposed project, "Frappe Activity: Mobile Phone Activity Classification," aims to leverage machine learning to accurately classify app usage as home, work, or unknown. This initiative aligns with our objective to improve time management, reduce work-life conflict, and enhance data security.

Project Proposal Report: click here

Activity 3: Initial Project Planning

Initial Project Planning involves outlining key objectives, defining scope, and identifying stakeholders for classifying mobile phone app usage. 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.

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 app usage data, 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

Data Sources Identified, Data Quality Report

The dataset for "Frappe Activity: Mobile Phone Activity Classification" is sourced from app usage logs. Data quality is ensured through thorough verification, addressing missing values, and maintaining adherence to ethical guidelines, establishing a reliable foundation for predictive modeling.

Data Collection Report: click here

Activity 2: Data Quality Report

The dataset includes user app usage details and categorical labels. Data quality is ensured through verification, addressing missing values, and maintaining adherence to ethical guidelines, establishing a reliable foundation for predictive modeling.

Data Quality Report:click here

Activity 3: Data Exploration and Preprocessing

Data Exploration involves analyzing the app usage dataset to understand patterns and distributions. Preprocessing includes handling missing values, scaling, and encoding categorical variables. These crucial steps enhance data quality, ensuring the reliability and effectiveness of subsequent analyses.

Data Exploration and Preprocessing Report: click here

Milestone 3: Model Development Phase

The Model Development Phase entails crafting a predictive model for app usage classification. It encompasses strategic feature selection, evaluating and selecting models (Random Forest, Decision Tree,KNN,Bagging Classifier), initiating training with code, and rigorously validating and assessing model performance for informed decision-making**.**

Activity 1: Feature Selection Report

The Feature Selection Report outlines the rationale behind choosing specific features (e.g., app name, usage duration) for the classification model. It evaluates relevance, importance, and impact on predictive accuracy, ensuring the inclusion of key factors influencing the model's ability to discern credible classifications.

Feature Selection Report: click here

Activity 2: Model Selection Report

The Model Selection Report details the rationale behind choosing Random Forest, Decision Tree, KNN,Bagging Classifier models for classification. 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 classification 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 app usage categories.

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 selected model was tuned 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 Gradient Boosting 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 the ultimate model. Its exceptional accuracy, ability to handle complexity, and successful hyperparameter tuning align with project objectives, ensuring optimal app usage classification.

Model Optimization and Tuning Phase Report:click here

Milestone 5: Project Files Submission and Documentation

For project file submission in , Kindly click the link and refer to the flow.

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.

Frappe Activity:click here