SmartBridge -Anemiasense: Leveraging Machine Learning For Precise Anemia Recognitions

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

Anemiasense aims to develop and deploy a machine learning-driven solution for precise anemia recognition in clinical settings. The project seeks to address the challenge of accurately identifying and classifying different types of anemia based on diverse sets of medical data, including laboratory results, patient demographics, and clinical history. By leveraging advanced machine learning algorithms and robust data analysis techniques, Anemiasense aims to enhance diagnostic accuracy, facilitate personalized treatment strategies, and improve overall healthcare outcomes for individuals affected by anemia.
Problem Statement Report: [Click Here](#)

Activity 2: Project Proposal (Proposed Solution)

Anemiasense represents a pivotal advancement in healthcare technology, leveraging machine learning to enhance the precision and efficiency of anemia recognition. By combining cutting-edge data science with clinical insights, this project aims to set a new standard for diagnostic accuracy and personalized patient care in the field of hematology.
Project Proposal Report: [Click Here](#)

Activity 3: Initial Project Planning

This initial project planning outline provides a structured approach to initiating "Anemiasense," focusing on defining objectives, milestones, timelines, resources, and risk mitigation strategies. Adjustments can be made based on specific project requirements and stakeholder feedback to ensure successful implementation and 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 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 QualityReport
The dataset for "Anemiasense: Leveraging Machine Learning For Precise Anemia Recognitions" is sourced from Kaggle. It includes applicant details and financial metrics. 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 for " Anemiasense: Leveraging Machine Learning For Precise Anemia Recognitions " is sourced from Kaggle. It includes applicant details and prediction metrics. Data quality is ensured thorough 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 prediction dataset to understand patterns, 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 in the loan approval project.
 Data Exploration and Preprocessing Report: [Click Here](#)

Milestone 3: Model Development Phase

The Model Development Phase entails crafting a predictive model for loan approval. It encompasses strategic feature selection, evaluating and selecting models (Random Forest, Decision Tree, KNN, XGB), 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., news headline, status etc.,) for the price prediction model. It evaluates relevance, importance, and impact on predictive accuracy, ensuring the inclusion of key factors influencing the model's ability to discern credible price prediction.
 Feature Selection Report: [Click Here](#)

Activity 2: Model Selection Report

The Model Selection Report details the rationale behind choosing Random Forest, Decision Tree, KNN, and XGB models for price 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 EvaluationReport

The Initial Model Training Code employs selected algorithms on the sentiment price prediction dataset, setting the foundation for predictive modeling. The subsequent Model Validation and EvaluationReport rigorously assesses model performance, employing metrics like accuracy and precision to ensure reliability and effectiveness in predicting loan outcomes.

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 logistic regression model was selected for its superior performance, exhibiting high accuracyduring 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 logistic regression 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 logistic regression as the ultimate model. Its exceptional accuracy, ability to handle complexity, and successful hyperparameter tuning align with project objectives, ensuring optimal loan approval predictions.

 Model Optimization and Tuning Phase Report: [Click Here](#)

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

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.