Sepsis Survival Minimal Clinical Records

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

Sepsis is a critical medical condition characterized by a dysregulated immune response to infection, often leading to organ dysfunction and mortality. Despite advances in medical care, predicting outcomes and improving survival rates for septic patients remains challenging. This project aims to analyze clinical records of septic patients to identify significant predictors of survival. By leveraging machine learning techniques and statistical analysis, the study seeks to develop a predictive model that can accurately forecast patient outcomes and aid in clinical decision-making. The ultimate goal is to enhance early detection, intervention strategies, and overall management of sepsis to improve patient survival rates and quality of care.

Ref. TemplateClick here Sepsis Problem Statement Report : Click here

Activity 2: Project Proposal (Proposed Solution)

The proposal report aims to transform sepsis survival prediction using Machine learning, boosting efficiency and accuracy. It tackles system inefficiencies , promising better clinical outcomes ,reduced risks, and happier patients. Key features include a machine learning -based decision-making.

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Activity 3: Initial Project Planning

Initial Project Planning involves outlining key objectives, defining scope, and identifying stakeholders for Sepsis Survival Minimal Clinical Records. 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 1application 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

Dataset variable will be statistically analyzed to identify patterns and outliers, with Python employed for preprocessing tasks like normalization and feature engineering. Data cleaning will address missing values and outliers, ensuring quality for subsequent analysis and modeling ,and forming a strong foundation for insights and predictions.

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Activity 2: Data Quality Report

The Data Quality Report 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

Dataset variable will be statistically analyzed to identify patterns and outliers, with Python employed for preprocessing tasks like normalization and feature engineering. Data cleaning will address missing values and outliers, ensuring quality for subsequent analysis and modeling ,and forming a strong foundation for insights and predictions.

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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

In the forthcoming update, each feature will be accompanied by a brief description. Users will indicate whether it's selected or not , providing reasoning for their decision. This process will streamline decision-making and enhance transparency in future selection.

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Activity 2: Model Selection Report

In the forthcoming Model Selection Report for sepsis survival prediction using minimal clinical records, various models will be outlined, detailing their descriptions, hyperparameters, including Accuracy or F1 score. This comprehensive report will provide insights into the chosen models and their effectiveness.

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

This 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 Smote on Random Forest Classifier

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

Activity 1: 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 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

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.