Traffictelligence- Advance Traffic Volume Estimation with Machine Learning

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.

1: Define Problem Statement

To overcome the problem of traffic congestion, the traffic prediction using machine learning which contains regression model and libraries like pandas, os, numpy, pyplot matplotlib are used to predict the traffic. This has to be implemented so that the traffic congestion is controlled and can be accessed easily. Users can collect the traffic information of the traffic flow and can also check the congestion flow from the start of day till the end of the day with the time span of one hour data.

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Problem Statement Report: Click Here

Activity 2: Project Proposal (Proposed Solution)

In this project we have shown use of Regression algorithms such as Linear Regression, Decision tree, Random Forest, and XGBoost to predict the count of traffic volume. We will train and test the data with these algorithms. From this best model is selected and saved in .pkl (Pickle) format. Once the model is saved, we integrate it with flask application and also deploy the model in IBM

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Project Proposal Report: Click Here

Activity 3: Initial Project Planning

Initial Project Planning involves outlining key objectives, defining scope, and identifying stakeholders for a traffic management 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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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 traffic

Predictions 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

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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Data Collection Report: Click Here

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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Data Quality Report: Click Here

Activity 3: Data Exploration and Preprocessing

Dataset variables 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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Data Exploration and Preprocessing Report: Click Here

Milestone 3: Model Development Phase

The Model Development Phase entails crafting a predictive model for traffic patterns. It encompasses strategic feature selection, evaluating and selecting models (Linear Regression, Decision Tree Regression, 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 feature selection.

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Feature Selection Report: Click Here

Activity 2: Model Selection Report

In the forthcoming Model Selection Report, various models will be outlined, detailing their descriptions, hyperparameters, and performance metrics, including Accuracy or F1 Score. This comprehensive report will provide insights into the chosen models and their effectiveness.

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Model Selection Report: Click Here

Activity 3: 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 decision tree regression and linear regression, XGBoost for multiple models, presented through respective screenshots.

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Initial Model Training Code, Model Validation and Evaluation Report: Click Here

Milestone 5: Project Executable Files

For project file submission in GitHub, Kindly click the link and refer to the flow: Click Here

Milestone 6: Project Documentation

For the documentation, kindly refer to the link. Click Here

Milestone 7: 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.

For the demonstration, kindly refer to the link. Click Here