WEB TRAFFIC ANALYSIS

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PHASE- 2 INNOVATION

INNOVATION IMPLEMENTATION

In this phase, we will outline the detailed steps for implementing the design to solve the problem of web traffic analysis. The previous phases have defined the problem, objectives, and the overall design. There are few steps to which are followed in this project.

Dataset Link: https://www.kaggle.com/datasets/adityakadiwal/web-traffica-analysis

STEP 2: DATA COLLECTION AND PREPARATION

Data Cleaning:

- Ensure that having a clean and well-prepared dataset before proceeding with model development.
- Perform data cleaning to handle missing values, duplicates, and outliers.
- Ensure that the dataset is clean and ready for analysis.

Data Splitting:

- Split the dataset into training and testing sets for model evaluation (e.g., 80% training, 20% testing).

Feature Engineering:

- Normalize or standardize numerical features.
- Apply one-hot encoding to categorical features (if any).
- Create interaction terms or derived features if they enhance model performance.

STEP 2: MODEL DEVELOPMENT

Model Selection:

- Machine learning algorithms based on the design phase recommendations (e.g., logistic regression, decision trees, random forests).

Model Training:

- Train selected machine learning models using the training dataset.
- Tune model hyperparameters for optimal performance.

Model Evaluation:

- Evaluate model performance using metrics like accuracy, precision, recall, F1-score, and ROC-AUC.

- Assess model interpretability and fairness.

STEP 3: MODEL INTERPRETATION AND VISUALIZATION

Feature Importance:

- For models supporting it (e.g., ARIM, Prophet, LSTM etc), analyze feature importance to understand key factors influencing water potability predictions.

Model Visualization:

- Create visualizations to explain and interpret model predictions, ensuring transparency and clarity in communicating results.

STEP 4: DOCUMENTATION

Documentation:

- Create comprehensive documentation that outlines the details of the implemented models, including hyperparameters, feature engineering steps, and any assumptions made.

STEP 6: FINAL TESTING AND VALIDATION

Final Testing:

- Conduct a final round of testing and validation to ensure that the entire implementation works as expected and meets the project's objectives.
- So that we can able to ensure complete process of the model.

STEP 7: DOCUMENTATION

Documentation:

- Document the codebase thoroughly, including comments, so that other team members or future maintainers can understand and work with the code.