

Project Design Phase Solution Architecture

Date	28 June 2025
Team ID	LTVIP2025TMID40870
Project Name	TrafficTelligence: Advanced Traffic Volume Estimation with Machine Learning.
Maximum Marks	4 Marks

Solution Architecture-Traffic Telligence

- The solution architecture of *TrafficTelligence* integrates a user-friendly HTML interface with a Flask backend that processes input data. The system loads a pre-trained machine learning model to predict traffic volume based on weather and time features. Results are rendered dynamically on a styled output page for user feedback. This modular setup ensures scalability, maintainability, and ease of deployment.

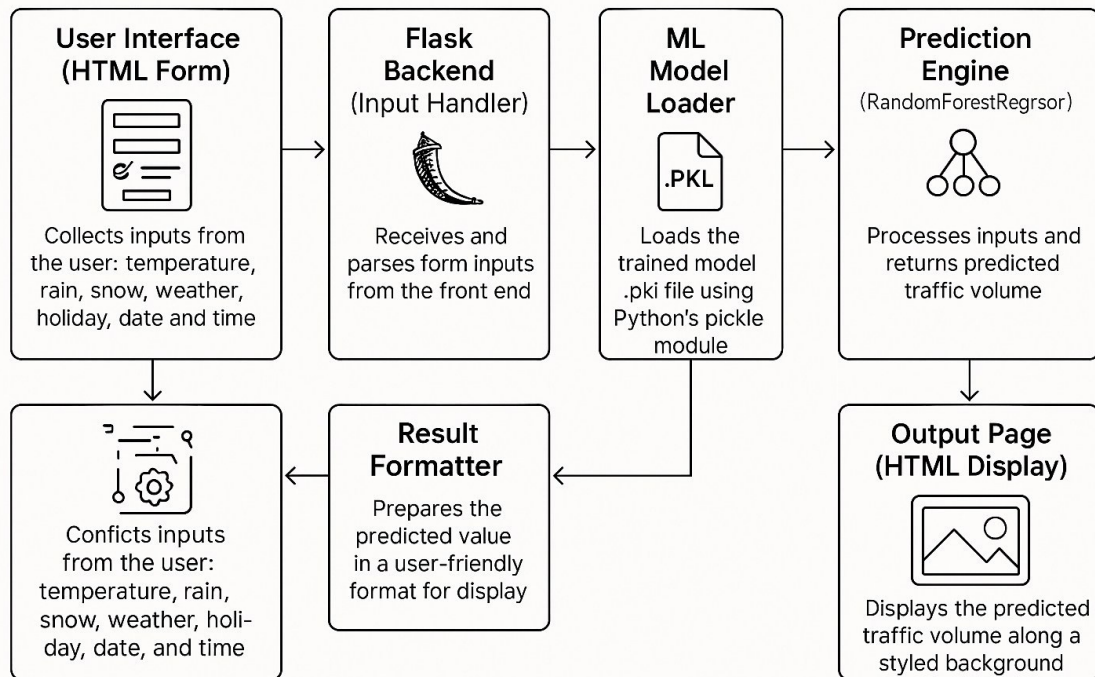
Example - Solution Architecture Diagram:

Components of the Architecture

- User Interface (HTML Form)
 - Collects inputs from the user: temperature, rain, snow, weather, holiday, date, and time.
- Flask Backend (Input Handler)
 - Receives and parses form inputs from the front end.
- Data Preprocessing Unit
 - Performs transformations: missing value handling, encoding, and type conversion.
- ML Model Loader
 - Loads the trained model.pkl file using Python's pickle module.
- Prediction Engine (RandomForestRegressor)
 - Processes inputs and returns predicted traffic volume.
- Result Formatter
 - Prepares the predicted value in a user-friendly format for display.

7. Output Page (HTML Display) o Displays the predicted traffic volume along with a styled background

7 Key Components of the Architecture



Technical Architecture:

