Project Design Phase-II
Technology Stack (Architecture & Stack)

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

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Example: Traffic Telligence

Guidelines:

Include all the processes (As an application logic / Technology Block)
Provide infrastructural demarcation (Local / Cloud)
Indicate external interfaces (third party API's etc.)
Indicate Data Storage components / services
Indicate interface to machine learning models (if applicable)

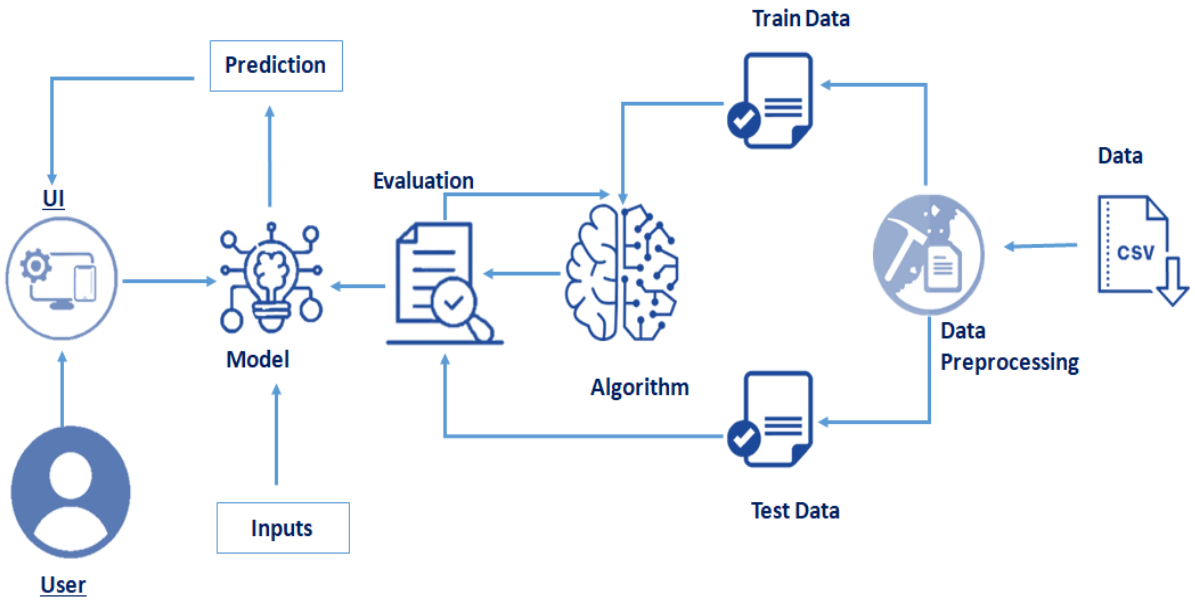

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Interface for users to upload data and view predictions	HTML
2.	Application Logic-1	Core processing logic: data validation, user flow	Python (Flask/Django)
3.	Application Logic-2	Video-to-data conversion for traffic analytics	OpenCV
4.	Application Logic-3	Predictive modeling and analytics	Scikit-learn, XGBoost
5.	Database	Store user inputs, model outputs, historical data	PostgreSQL, MongoDB
6.	Cloud Database	Cloud-hosted solution for scalability and reliability	Amazon RDS, Firebase Firestore
7.	File Storage	Store raw video/data files and result exports	AWS S3, Google Cloud Storage
8.	External API-1	Real-time weather data to adjust traffic predictions	OpenWeatherMap API
9.	External API-2	Location validation or geocoding	Google Maps API, Mapbox
10.	Machine Learning Model	Predict traffic volume based on features extracted	Random Forest, Linear regression, D tree.
11.	Infrastructure (Server / Cloud)	Hosting the application, serving requests, model inference	Web Apps

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Uses open and free tools for development	Flask (Python), Scikit-learn, Pandas, HTML, CSS
2.	Security Implementations	Input validation and basic protection from bad data inputs	Flask validation, OWASP guidelines (basic)
3.	Scalable Architecture	Follows modular and expandable design	Technology used
4.	Availability	Can be hosted on platforms with high uptime	Technology used
5.	Performance	Fast model response and low memory usage	Technology used