Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	31 January 2025
Team ID	LTVIP2025TMID59638
Project Name	TrafficTelligence: Advanced Traffic Volume Estimation using Machine Learning
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Real-Time Traffic Estimation	- Process live video feed or sensor data - Update vehicle counts every 5 minutes - Display volume with timestamps
FR-2	Congestion Detection & Route Analysis	- Detect congestion using ML models - Color-coded congestion levels - Suggest alternate routes
FR-3	Data Visualization Dashboard	- Display traffic heatmaps - Graphs for peak/off-peak hours - Location-based filtering
FR-4	Model Training & Optimization	- Implement data augmentation (rotation, flipping) - Train model with historical and live data - Hyperparameter tuning
FR-5	System Integration for Developers	- Provide RESTful API for traffic data - Model integration guide - Real-time data stream support
FR-6	Customizable Traffic Strategy Interface	- Allow city-based customization - Strategy templates for metro/rural areas - Admin control panel
FR-7	Testing & Quality Assurance	- Perform automated and manual testing - Web interface bug tracking - Model accuracy validation
FR-8	Stakeholder-Specific Reporting	- PDF/CSV export of traffic data - Report customization by date/location - Scheduled email reports
FR-9	Educational and Research Utility	- Public dataset access for training - Documentation for model use - Student/researcher user roles

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	The system should offer an intuitive and user-friendly interface for all stakeholders (e.g., traffic managers, analysts, drivers).
NFR-2	Security	Data must be protected using secure protocols. Only authorized users can access traffic data and model endpoints.
NFR-3	Reliability	The system should provide consistent traffic estimations and visualizations with minimal errors or downtime.
NFR-4	Performance	The platform must process traffic data and respond within 3 seconds for all critical functionalities.
NFR-5	Availability	The system should be available 24/7 with at least 99.5% uptime to support continuous monitoring.
NFR-6	Scalability	The system should support an increasing number of locations, data sources, and users without degradation in performance.