

Project Design Phase-II

Solution Requirements (Functional & Non-functional)

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| Date | 27 th June 2025 |
| Team ID | LTVIP2025TMID59892 |
| Project Name | TrafficTelligence: Advanced Volume Estimation Using with 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 | Image Preprocessing | Convert raw traffic footage into clean frames - Apply object detection filters - Noise removal |
| FR-2 | Vehicle Detection and Classification | Detect vehicles in frame using ML model - Classify by type (car, bus, bike, etc.) |
| FR-3 | Performance and Reporting | Estimate vehicle count per unit time - Generate daily/hourly volume reports |
| FR-4 | Data Handling | Store processed data in a structured format - Enable real-time and historical data access |

Non-functional Requirements:

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

| FR No. | Non-Functional Requirement | Description |
|--------|----------------------------|--|
| NFR-1 | Usability | The system interface should be user-friendly and easy to interpret for traffic analysts and administrators. |
| NFR-2 | Security | Data collected from surveillance should be securely stored and transmitted using encryption. |
| NFR-3 | Reliability | The system should maintain consistent accuracy in vehicle detection and count under various lighting and weather conditions. |

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| NFR-4 | Performance | The ML model should process traffic data in near real-time with minimal latency. |
| NFR-5 | Availability | The system should be accessible 24/7 with minimum downtime, especially during peak traffic hours. |