Project Design Phase-II

Solution Requirements (Functional & Non-functional)

Date: 29th June 2025

Team ID: LTVIP2025TMID42078

Project Name: TrafficTelligence: Advanced Traffic Volume Estimation with Machine Learning

Maximum Marks: 4 Marks

Functional Requirements

FR-1 Traffic Data Integration

- Ingest historical traffic data from government or third-party APIs
- Real-time data collection from traffic sensors or streaming APIs
- Normalize and preprocess incoming data

FR-2 Traffic Prediction Engine

- Train and deploy ML models for traffic volume estimation
- Use inputs like time, weather, and events
- Provide confidence scores for predictions

FR-3 Dashboard & Visualization

- Display traffic predictions and trends on an interactive dashboard
- Include charts, maps, and heatmaps
- Allow users to filter by time, location, and prediction type

FR-4 Scenario Modules

- Dynamic Traffic Management: Suggest signal adjustments or lane changes
- Urban Planning Support: Forecast long-term patterns for planners
- Commuter Guidance: Integrate route suggestions into app interfaces

FR-5 User Roles & Access

- Admin portal for model monitoring and data upload
- User interface for commuters/city planners
- Optional API access for third-party developers

FR-6 Export & Reports

- Generate reports in CSV/PDF
- Schedule regular traffic reports for stakeholders

Non-Functional Requirements

NFR-1 Usability
Simple and user-friendly interface for both experts and general users.

NFR-2 Security
Secure APIs and role-based access control for sensitive traffic data.

NFR-3 Reliability
System should consistently deliver accurate predictions with low downtime.

NFR-4 Performance
Real-time predictions should be computed within 2–3 seconds.

NFR-5 Availability
Platform should be accessible 24/7 with fallback for offline dashboards.

NFR-6 Scalability
Should support increasing data loads and additional cities/regions in the future.