Project Design
Phase Solution
Architecture

Date	25 June 2025
Team ID	LTVIP2025TMID32460
Project Name	Traffic Telligence: Advanced Traffic Volume Estimation with Machine Learning
Maximum Marks	4Marks

Solution Architecture:

The solution architecture of **Traffic Telligence** bridges the gap between urban traffic challenges and cutting-edge AI technologies. The architecture outlines the system's data pipelines, real-time processing modules, and predictive modeling components, providing clarity to stakeholders on its functionality and integration. It defines the key features such as dynamic traffic estimation, data visualization dashboards, and adaptive control suggestions. The development phases include data collection, model training, API integration, and user interface deployment. All components are specified to ensure scalability, performance, and user-centric delivery of traffic intelligence solutions.

Let me know if you'd like this represented visually as a **diagram** or included i

Example – Solution Architecture Diagram:

Section 4.1
Spatial correlations

Traffic dataset

N
T
Partial Volume

Road Network

N
T
Global Speed

ASFC

A_{spa}
Static distance adjacency matrix

A_{sfc}^{t}
Dynamic Speed pattern adjacency matrix

$\tilde{A}_t$ H_t^{out}

DGCR

H_{t+1}^{out}

Section 4.2
Temporal correlations

H_T^{out}
H_t^{out}
H_1^{out}
S

Decomposition

S_T S_s

1D Convolution
Trend model
H_{cn}^{T+1}

MSTF
Seasonal model
H_{cn}^{T+1}

H_{T+1}^{out}

Section 4.3
Output layer

Contact

Fully Connected Layer

$\tilde{x}_v$

N
Global Volume