

Project Design Phase-I
Proposed Solution Template

Date	19 September 2022
Team ID	PNT2022TMID593144
Project Name	TrafficTelligence: Advanced Traffic Volume Estimation with Machine Learning
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	<p>Traffic volume estimation is a critical task for transportation planning and management. It is necessary to accurately estimate traffic volumes on individual roads and networks to design and operate transportation systems efficiently and effectively.</p> <p>Traditional traffic volume estimation methods are based on traffic counts collected by loop detectors and other sensors. However, these methods can be expensive and time-consuming to deploy and maintain. Additionally, they may not provide accurate estimates of traffic volumes on all roads, especially in areas with limited sensor coverage.</p>
2.	Idea / Solution description	<p>Advanced traffic volume estimation with machine learning (ML) offers a more efficient and cost-effective way to estimate traffic volumes on all roads, regardless of sensor coverage. ML models can be trained on a variety of data sources, including probe vehicle data, traffic speed data, and weather data, to learn the complex relationships between these factors and traffic volumes.</p> <p>Once trained, ML models can be used to estimate traffic volumes on individual roads and networks in real time. This information can be used to improve transportation planning and management, reduce congestion, and improve safety.</p>
3.	Novelty / Uniqueness	<p>The novelty of advanced traffic volume estimation with ML lies in its ability to provide accurate estimates of traffic volumes on all roads, regardless of sensor coverage. ML models can learn the complex relationships between a variety of data sources and traffic volumes, which allows them to make accurate predictions even in areas with limited sensor data.</p>

4.	Social Impact / Customer Satisfaction	<p>Advanced traffic volume estimation with ML has the potential to significantly improve social welfare and customer satisfaction in several ways. By improving transportation planning and management, ML models can help to reduce congestion, improve safety, and reduce travel times. This can lead to several benefits for society, including improved air quality, reduced fuel consumption, and increased productivity.</p> <p>Additionally, ML models can be used to provide real-time traffic information to travellers, which can help them to make better decisions about their travel routes and schedules. This can lead to reduced travel times and stress levels for travellers, as well as improved customer satisfaction.</p>
5.	Business Model (Revenue Model)	<p>There are several potential business models for advanced traffic volume estimation with ML. One model is to provide subscription-based access to ML models and traffic data to transportation agencies and other organizations. Another model is to develop and sell ML-based traffic estimation software and hardware. Additionally, ML models could be used to develop new value-added services, such as real-time traffic updates and route planning tools.</p>
6.	Scalability of the Solution	<p>Advanced traffic volume estimation with ML is a highly scalable solution. ML models can be trained on large datasets of traffic data, which can be easily scaled up to include new data sources and new geographic areas. Additionally, ML models can be deployed on a variety of computing platforms, including cloud computing platforms, which allows them to be scaled up or down as needed.</p> <p>Overall, advanced traffic volume estimation with ML is a promising new technology with the potential to significantly improve transportation planning and management, reduce congestion, improve safety, and reduce travel times. It is a scalable solution with several potential business models.</p>