**Project development**

**Model performance**

**Sales force-Based AI Project Phases: Traffic Telligence : Advanced traffic volume estimation with Machine Learning**

* **Project Objective**

To develop a smart, AI-powered traffic monitoring and prediction system that uses machine learning to estimate future traffic volumes and integrates with Salesforce to manage alerts, generate reports, and support decision-making for traffic authorities and city planners.

* **High-Level System Architecture**

[ IoT Traffic Sensors | GPS | Cameras | Weather APIs ]

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[Data Preprocessing & Feature Engineering]

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[Machine Learning Model (XGBoost / LSTM)]

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[Traffic Volume Prediction per Road/Zone/Hour]

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[Salesforce Integration & Dashboards]

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[Notifications | Reports | Incident Management | Alerts]

1. **Data Sources**

IoT devices: Vehicle count, speed, type

CCTV/Cameras: Visual traffic input

GPS/mobile data: Real-time traffic flow

Weather APIs: Rain, fog, visibility

Calendar/Event APIs: Public holidays, sports events

1. **Machine Learning Model – Traffic Volume Estimation**

🔧 **Techniques Used**:

Time Series Forecasting: Using LSTM or ARIMA for hourly traffic patterns.

Ensemble Models: Random Forest, XGBoost for multi-variable inputs.

Deep Learning (CNN-LSTM): For video data + time-series estimation.

🧾 **Sample Features**:

Time (hour, weekday, holiday)

Traffic from last 3 hours

Road type / lane count

Weather (rain, visibility)

Event density

📊 **Performance Metrics:**

MAE (Mean Absolute Error): ~50-100 vehicles/hour

RMSE (Root Mean Squared Error): Lower than 120

R² Score: ≥ 0.85 (good prediction accuracy)

1. **Salesforce Integration – Intelligent Workflow**

Salesforce plays a key role in visualizing, managing, and acting on traffic predictions.

🔁 **What Salesforce Does**:

Function Salesforce Tools Used

Real-time alerts Salesforce Flow + Platform Events

Reporting & dashboards Tableau CRM / Einstein Analytics

Escalation of congestion Service Cloud + Case Management

Public authority updates Experience Cloud Portal

Predictive insights Einstein Prediction Builder

1. **Sample Dashboard Widgets**

Widget Description

o Traffic Prediction (Next Hour) Shows predicted vehicle count by location o High Traffic Alert Log Past/pending alerts o Weather-Traffic Correlation Visual link between weather and traffic o Top Congested Routes Based on predicted and actual data o Prediction Calendar View Predicted vs actual trend comparison

1. **Use Case Scenarios**

• Urban Traffic Control Center

Get alerts about likely congestion in 30–60 mins