# Traffic Flow Prediction

Steps to implement our project:

1- Data Collection: ✅ *done*

2- Preprocessing : Gouday

***Clean the Data***

***Transform Features:***

Time-based features: Extract hour, day, and weekday/weekend.

x>Region-based features: Aggregate traffic data by road or area.

Normalize continuous variables (e.g., vehicle count, speed).

***Integrate Data:***

Combine traffic and any supplementary data(e.g, weather).

3- Model Development: Max

***Model Selection***

Start simple with regression-based models like Linear Regression or Random Forest.

Advance to deep learning models like LSTMs for time-series forecasting if needed.

***Features for Prediction:***

Traffic volume or speed from the previous hours.

Time features (e.g., hour of day, day of week).

External factors (e.g., weather, holidays).

***Training and Validation:***

Use a train-test split or cross-validation to evaluate the model.

Metrics: Mean Absolute Error (MAE), Root Mean Square Error (RMSE).

4- Visualization and Output : Chikous

Simple Output:

Provide predictions as CSV files or visualizations(e.g, congestion levels for different times of the day).

Dashboard (optional):

Use tools like plotly or Dash to display traffic flow predictions on maps or charts.