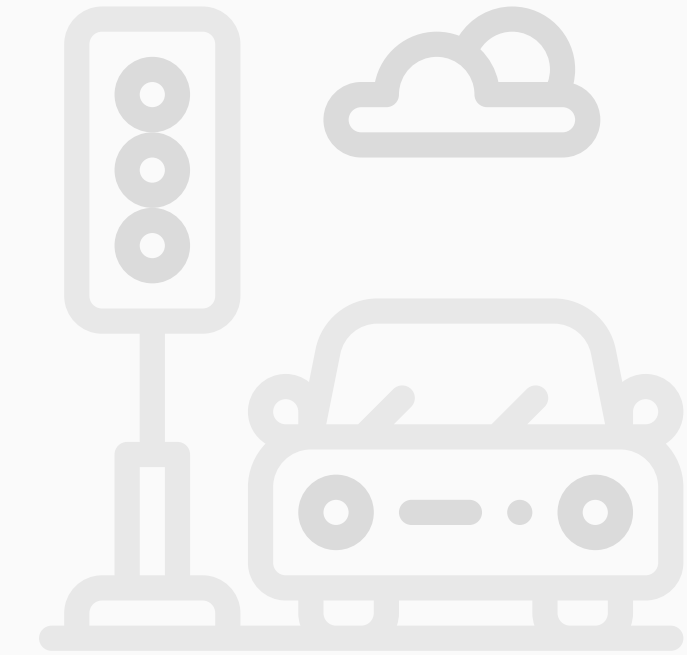**Organisation Name:** Maruti Suzuki India Ltd.

Problem Statement: Live Digital Traffic Management/Information System using Geo Coordinates

Current Scenario: Traffic jams in Indian cities aren't just frustrating, they are also expensive.India's biggest cities may be losing upto 1.5 trillion annually to traffic congestion. Potholes took a deadly toll in 2018, claiming almost 10 lives daily with annual fatalities in the country adding up to 3,597. Over-speeding and general ignorance towards road safety laws are the biggest reasons for road accidents in India. A complete monitoring of the traffic rules and its violators is a must along with ensuring flow of traffic in a smarter way to help citizens spend less time at the traffic signals.
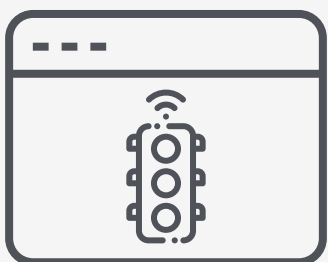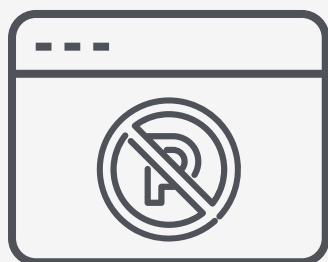
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Musafir

Team Name: FooBar
Team Leader Name: Ishan Joshi
College code: 1-3713389121
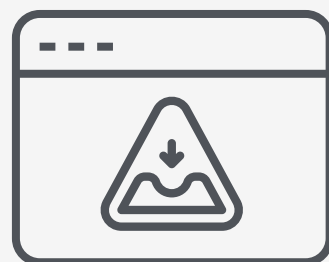
What We Propose

Adaptive
Traffic Flow

AI based Adaptive Signal Scheduling guidance system, to redirect the traffic according to congestion, and special case needs such as Ambulance and Firetruck routing
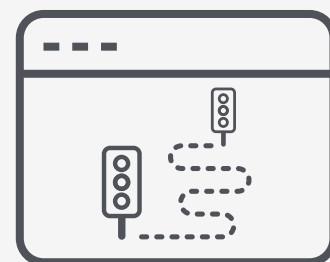
Identify
Traffic Violators

An Image Recognition module that helps Govt authorities identify traffic violators and incur penalties through linked bank accounts.

Pothole
Detection & Mapping

Pothole detection and in-navigation alert of upcoming potholes using intelligently analysing movement of Accelerometer and Gyroscope of the User's phone.

Traffic Light
Map

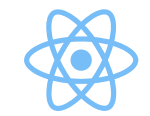A map for of all the traffic lights within the city and their real time status & indicating when signals are malfunctioning.

Identify
Special Events

Events like Road repairs,- fire, riots, accidents, protests, traffic reporting module for Police, Local Guides crowdsource and Social Media Analytics to divert traffic accordingly and notify daily commuters through push notifications, email & SMS.

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Technology Stack   Dependencies & Show Stoppers

- React
- Google Street View Static API
- Waze SDK
- ExpressJS
- OpenCV
- Tensorflow/YOLO
- Android Studio
- Firebase/AWS
- Google Vision API
- OpenStreetMap API
- Unity Engine/Unity ML Agents

Dependencies

- Usage of the App
- GPS and Mobile Data
- Data for Training a Pothole Classifier
- Mobile Phones with inbuilt Accelerometer and Gyroscope

Show Stoppers

- CCTV Installations & Footage
- Linking Vehicles with Accounts (Penalty)
- Registering Emergency Vehicles in Advance
- License Data from RTO

Architecture   5

Traffic Violation Detection

CCTV feeds → Violation Detection Algorithm → Automatic License Plate Detection → RTO Database → Penalty Fine Generation

Violation Detection Algorithm ← RTO Database

High level Architecture

Waze API → Traffic Light Location → Map

Waze API → Traffic Data

Traffic Data ← Traffic Light Scheduling Algorithm

Traffic Light Scheduling Algorithm → Live Status of Traffic Lights

Traffic Data → Map

Map → Users

Local Guides → Traffic Data

Local Guides → Special Events

Special Events → Map

Special Events → Traffic Light Scheduling Algorithm

Pothole Data → Map

On-Road Training → Pothole Data

Social Media Data → Social Media Analytics → Special Events

Phone → On-Road Training

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