

Traffic Telligence: AdvancedTraffic Volume Estimation With Machine Learning

Project document format

1. Introduction:

- Project Title: traffic telligence advanced traffic volume estimation with machine learning

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2. Project Overview:

- Purpose: he purpose of Traffic Telligence (i.e., Traffic Intelligence) is to analyze, estimate, and predict traffic patterns using technologies like machine learning, data analytics, and real-time data. This helps in making smarter, data-driven decisions for better traffic flow and management.

- Features: Highlight key features and functionalities.

Real-Time Traffic Monitoring

- Collects and analyzes live traffic data from cameras, sensors, and GPS.

Predictive Traffic Analysis (Using ML)

- Forecasts future traffic conditions based on historical and current data.

Traffic Volume Estimation

- Estimates the number of vehicles on a road over time to manage flow

3. Architecture

- Frontend: Describe the frontend architecture using React.
- Backend: Outline the backend architecture using python and html.css.
- Database: Detail the database schema and interactions with MongoDB.

4. Setup Instructions

- Prerequisites: List software dependencies (e.g.,vs code).
- Installation: Step-by-step guide to clone, install Jupiter notebook, and set up theenvironment variables.

- Server: Explain the organization of the Node.js backend.

6. Running the Application

- Provide commands to start the frontend and backend servers locally.
 - o Frontend: npm start in the client directory.
 - o Backend: npm start in the server directory.

7. API Documentation

- Document all endpoints exposed by the backend.
- Include request methods, parameters, and example responses.

8. Authentication

- Explain how authentication and authorization are handled in the project.
- Include details about tokens, sessions, or any other methods used.

9. User Interface

- Provide screenshots or GIFs showcasing different UI features.

10. Testing

- Describe the testing strategy and tools used.

11. Screenshots or Demo

- Provide screenshots or a link to a demo to showcase the application.

HTML CODES USED

Index.html

```
<!DOCTYPE html>

<html >

<head>

  <meta charset="UTF-8">

  <title>Traffic Volume Estimation</title>

</head>

<body
                                background="https://cdn.vox-
cdn.com/thumbor/voARJfEKvTp6iMSzW3ExPn06TDM=/0x78:3000x1766/1600x900/cdn.vox-
cdn.com/uploads/chorus_image/image/44219366/72499026.0.0.jpg" text="black">

  <div class="login">

<center><h1>Traffic Volume Estimation</h1></center>

  <!-- Main Input For Receiving Query to our ML -->

  <form action="{{ url_for('predict')}}" method="post">
```

```

<h1>Please enter the following details</h1>
</style></head>

<label for="holiday">holiday:</label>

  <select id="holiday" name="holiday">
<option value=7>None</option>
<option value=1>Columbus Day</option>
  <option value=10>Veterans Day</option>
    <option value=9>Thanksgiving Day</option>
    <option value=0>Christmas Day</option>
    <option value=6>New Years Day</option>
    <option value=11>Washingtons Birthday</option>
    <option value=5>Memorial Day</option>
    <option value=2>Independence Day</option>
    <option value=8>State Fair</option>
    <option value=3>Labor Day</option>
    <option value=4>Martin Luther King Jr Day</option>
  </select> &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<br>
<br>  <label>temp:</label>

    <input type="number"  name="temp" placeholder="temp  " required="required" /><br>

<br>

    <label>rain:</label>

    <input type="number" min="0" max="1" name="rain  " placeholder="rain"
required="required" /><br>

<br>

    <label>snow:</label>

    <input type="number" min="0" max="1" name="snow  " placeholder="snow  "
required="required" /><br>
<br>

    <label for="weather">weather:</label>

    <select id="weather" name="weather">

```

```
<option value=1>Clouds</option>
<option value=0>Clear</option>
<option value=6>Rain</option>
<option value=2>Drizzle</option>
<option value=5>Mist</option>
<option value=4>Haze</option>
<option value=3>Fog</option>
<option value=10>Thunderstorm</option>
<option value=8>Snow</option>
<option value=9>Squall</option>
<option value=7>Smoke</option><
</select> &nbsp;&nbsp;&nbsp;<br>
<br>
<label>year:</label>

<input type="number" min="2012" max="2022" name="year" placeholder="year"
required="required" /><br>

<br>
<label>month:</label>

<input type="number" min="1" max="12" name="month" placeholder="month"
required="required" /><br>
<br>
<label>day:</label>

<input type="number" min="1" max="31" name="day" placeholder="day"
required="required" /><br>
<br>
<label>hours:</label>

<input type="number" min="0" max="24" name="hours" placeholder="hours"
required="required" /><br>
<br>
<label>minutes:</label>

<input type="number" min="0" max="60" name="minutes" placeholder="minutes"
required="required" /><br>
```

```

<br>

    <label>seconds:</label>

    <input type="number" min="0" max="60" name="seconds " placeholder="seconds "
required="required" /><br>

<br>

<br><br>

<button type="submit" class="btn btn-primary btn-block btn-large"
style="height:30px;width:200px">Predict</button>


</form>

<br>

    {{ prediction_text }}

<br>

<br>

    

    

    

<br>

<br>

    


</div>

</body>

</html>

```

12. Known Issues

- Document any known bugs or issues that users or developers should be aware of

Traffic Congestion Management

Cities like **Los Angeles** and **Singapore** use traffic intelligence to monitor congestion and optimize signal timings in real time. **Emergency Response Routing**

Used by emergency services to **identify fastest routes** for ambulances, fire trucks, and police based on real-time traffic conditions.

13. Future Enhancements

- Outline potential future features or improvements that could be made to the project.

Traffic Telligence (Traffic Intelligence) is an advanced system that uses machine learning, data analytics, IoT, and AI to collect, analyze, predict, and manage traffic data. It aims to reduce congestion, improve road safety, and enable smart city planning through intelligent traffic insights.