

TITLE: TRAFFIC CONTROL MANAGEMENT SYSTEM

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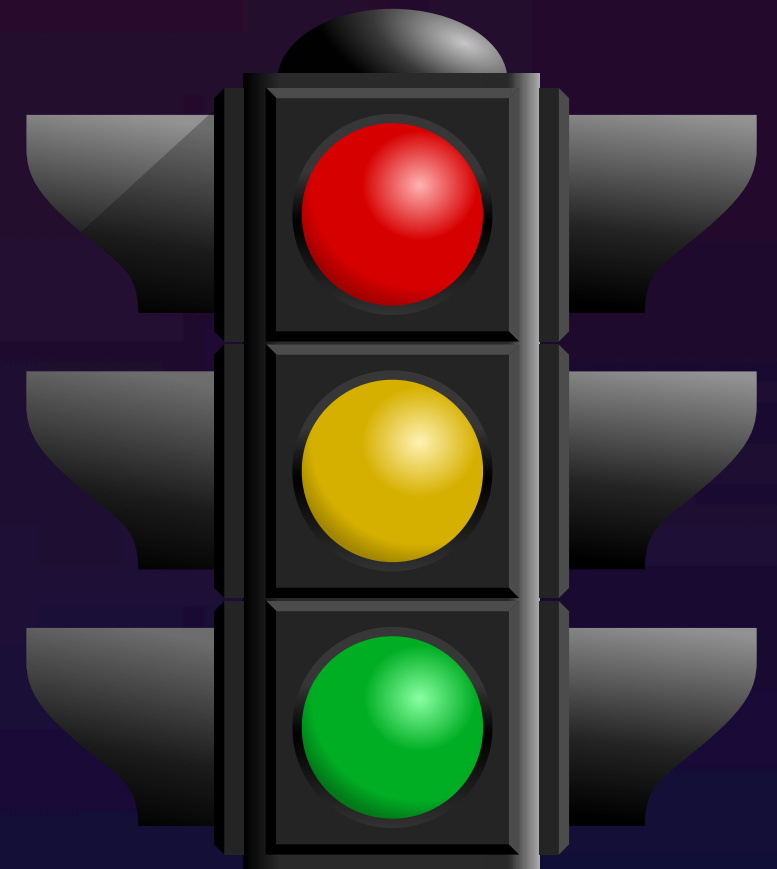
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INTRODUCTION

- Traffic congestion is one of the biggest challenges in modern urban areas, leading to delays, increased fuel consumption, and pollution. Effective traffic management is essential to ensure smooth vehicular movement and minimize congestion.
- The Junction Traffic Controller System is an innovative solution designed to address these challenges by automating traffic signal monitoring and control. This system allows remote management of traffic signals through real-time data updates and a user-friendly dashboard. It ensures that traffic signals can be efficiently monitored, controlled, and analyzed to improve overall traffic flow.
- This project leverages technology to provide a scalable and efficient solution for urban traffic management. By integrating data visualization, user management, and reporting, it reduces manual intervention and enables quicker, data-driven decisions.



RELEVANCE OF THE TOPIC

- Highlight the importance of efficient traffic management.
- Explain how traffic congestion affects urban areas.
- Importance of automation in traffic control to reduce manual error



DESCRIPTION OF THE PROJEC

The Junction Traffic Controller System is a software application designed to monitor and manage traffic signals at multiple junctions remotely. This system uses modern technologies to provide real-time data updates, remote control capabilities, and advanced reporting features. It ensures efficient traffic management, reduces manual interventions, and improves decision-making through data-driven insights.

The project includes a centralized dashboard that visually represents the status of traffic signals at various junctions. Data from junction controllers is sent to the system in API/JSON format, which is processed and displayed for monitoring and control. Authorized users can perform actions such as adding devices, updating details, and manually controlling signals during emergencies.

The system is built with a robust user management module that ensures role-based access for administrators, operators, and police personnel. Additionally, it generates comprehensive reports to analyze traffic patterns and junction performance, enabling authorities to optimize traffic flow and make informed decisions.

This scalable system is designed to meet the growing needs of urban traffic management, providing an effective solution to minimize congestion and improve road safety.

OBJECTIVES OF THE STUDY

- Remote monitoring and management of junctions.
- Provide real-time traffic updates and control.
- Enhance decision-making through data visualization and reporting.

EXISTING SYSTEM AND PROPOSED SYSTEM

Existing System:

- Traffic management is mostly manual or uses static timer-based systems.
- Limited monitoring capabilities.

Proposed System:

- Automated monitoring and management.
- Real-time updates using APIs.
- Scalable, user-friendly system with advanced reporting.

MODULES

Network Monitoring Module

- Purpose: To manage and monitor devices in the traffic control network.
- Features:
- Adding Devices: New traffic control devices can be added to the system and linked with junctions.
- Viewing Device Details: Display device information such as location, status, and connectivity.
- Updating Details: Modify device data or settings remotely.
- Real-Time Monitoring: Continuously monitor the operational status of devices across all junctions.

Junction Controller Module

- Purpose: To handle data exchange and control between the junction and the system.
- Features:
- API/JSON Communication: Junction controllers send traffic data in real-time using APIs in JSON format.
- Junction Animator: Graphical representation of the traffic flow and signal changes at each junction.
- Junction Statistics: Provides analytical data such as signal timing, traffic volume, and congestion levels.
- Police Panel Control: Manual override button for police officers to manage traffic during emergencies.

User Management Module

- Purpose: To ensure secure access and role-based privileges for system users.
- Features:
- Three-Tier User Roles:
 - Admin: Full control over the system, including adding or managing users.
 - Operators: Can monitor and manage junctions but with limited permissions.
 - Police Users: Access to manual override controls for emergency traffic management.
- User Logs: Track user activities for accountability and auditing.

Reports Module

- Purpose: To generate and manage reports based on traffic data.
- Features:
- Traffic Flow Reports: Analyze the volume of vehicles at different times and locations.
- Device Performance Reports: Monitor device uptime and operational efficiency.
- Incident Reports: Document unusual events or manual interventions at junctions.
- Export reports in formats like PDF or Excel for further analysis

Dashboard Module

- Purpose: To provide a centralized, user-friendly interface for managing the system.
- Features:
- Real-Time Junction Status: Display live traffic signal states and congestion levels graphically.
- Pictorial Representation: Use charts, graphs, and animations to visualize traffic data.
- Alerts and Notifications: Notify users about device malfunctions or traffic anomalies.

TOOLS, FRAMEWORKS, AND PROGRAMMING LANGUAGES

- Front-End: HTML, CSS, Bootstrap
- Back-End: PHP
- Database: MySQL
- Platform: XAMPP



DATASETES

- API/JSON data from junction traffic controllers.
- Logs of system activity and traffic statistics stored in the database.

REFERENCES

1. Smart Traffic Control Systems (<https://www.ijser.org>)
2. Smart Traffic Systems by Government of India, <https://smartcities.gov.in>
3. A Comprehensive Study on Traffic Management Systems Using Modern Technologies



THANK YOU