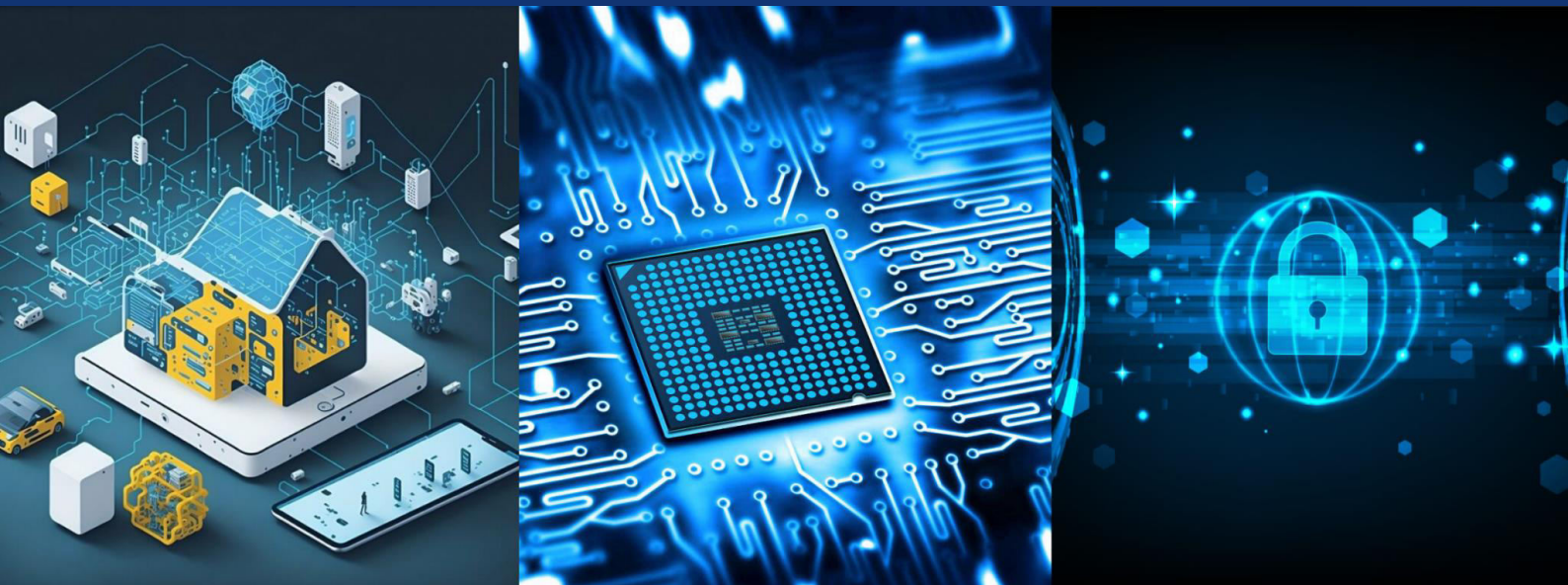




International Journal of Innovative Research in Computer and Communication Engineering

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)





International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Traffic Police Automatic Duty Allotment System

Mr.Marimuthu.S¹, Dr. Lourdu Xavier.J²

PG Scholar, Dept. of Master of Computer Applications, R.V.S. College of Engineering, Dindigul, Tamil Nadu, India¹

Head of the Department, Dept. of Master of Computer Applications, R.V.S. College of Engineering, Dindigul, Tamil Nadu, India²

ABSTRACT: The Automatic Traffic Police Duty Allotment System is a web-based application developed to automate and simplify the process of assigning duties to traffic police officers. The system reduces manual work, improves duty management efficiency, and ensures fair duty allocation among officers. It contains two main modules: Admin Module and Officer Module. The admin can manage officers, duty locations, schedules, attendance, leave requests, and notifications through a centralized platform. Traffic police officers can view their duty schedules, attendance records, leave status, and notifications, as well as apply for leave through the system. The major feature of the project is the Automatic Duty Assignment Module, which assigns duties using methods such as Workload-Based Assignment, Round Robin Method, Officer Role-Based Assignment, and Random Duty Allocation. These methods help ensure fair workload distribution, avoid favoritism, and improve transparency in duty management. The system also provides notifications for assigned duties and schedule updates, reducing confusion and improving coordination. Overall, the system enhances traffic police management through automation, accuracy, transparency, and efficient duty scheduling.

I. INTRODUCTION

Traffic management is an important responsibility in urban areas, where traffic police officers play a major role in controlling road congestion, maintaining law and order, and ensuring public safety. With the rapid increase in population and vehicles, managing traffic efficiently has become more challenging. In many police departments, duty allocation is still handled manually, which is time-consuming and often leads to problems such as scheduling conflicts, unequal workload distribution, human errors, and lack of proper record maintenance. Manual systems also make it difficult for administrators to track attendance, leave requests, officer availability, and duty history effectively. To overcome these challenges, the Automatic Traffic Police Duty Allotment System is developed as a smart and centralized web-based solution.

The main objective of the system is to automate the process of assigning duties to traffic police officers in a fair, accurate, and efficient manner. The system uses intelligent duty allocation methods such as Round Robin allocation, workload-based assignment, role-based assignment, and random duty scheduling to ensure equal opportunities and balanced work distribution among officers. This helps reduce officer stress and improves operational efficiency.

The system includes two main modules: Admin Module and Officer Module. The Admin Module allows administrators to manage officer details, traffic locations, shifts, attendance records, leave approvals, notifications, and duty schedules. Administrators can monitor all activities from a centralized dashboard and make changes whenever required. The Officer Module allows traffic police personnel to view their assigned duties, shift timings, duty locations, attendance history, leave status, and notifications. Officers can also request leave through the system, making communication between administrators and officers faster and more organized.

The system is developed using Python Django for backend development, HTML, CSS, and JavaScript for frontend design, and SQLite/MySQL for database management. The user-friendly interface makes the system simple and easy to use for both administrators and officers. Notifications and alerts help officers stay updated about duty changes and important announcements.

By automating the duty allocation process, the system minimizes manual effort, reduces paperwork, and improves accuracy in scheduling. It also maintains centralized records of all officer activities, which improves transparency and



International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

accountability within the department. Attendance and leave management features help ensure that only available officers are assigned duties, preventing scheduling issues and manpower shortages.

Overall, the Automatic Traffic Police Duty Allotment System improves traffic management operations by ensuring proper deployment of officers across different locations and shifts. The system enhances efficiency, saves administrative time, supports better decision-making, and contributes to smoother traffic control and public safety management in urban environments.

II. EXISTING SYSTEM

In many traffic police departments, duty allocation is still performed manually using registers or spreadsheets. This process is time-consuming and may lead to duplicate assignments, uneven workload distribution, scheduling errors, and communication delays. Managing attendance, leave requests, and shift schedules manually becomes difficult, especially across multiple locations. Existing systems also lack proper workload balancing and shift rotation, causing repeated duties for some officers. High-traffic areas may not always be assigned to experienced personnel, affecting traffic control efficiency. During emergencies or sudden leave requests, updating schedules manually becomes challenging and increases human errors. Therefore, an automated Traffic Police Duty Allotment System is needed to ensure fair duty distribution, improve transparency, reduce manual effort, and support efficient traffic management operations.

DISADVANTAGES

- Manual duty allocation takes more time and effort from administrators.
- There is no proper system for equal workload distribution among officers.
- Managing attendance, leave records, and duty schedules manually is difficult.
- Manual scheduling may cause errors, duplicate assignments, and communication delays.

III. PROPOSED SYSTEM

The proposed Traffic Police Automatic Duty Allotment System is designed to automate and simplify duty assignment for traffic police officers. The system manages officer deployment, duty schedules, attendance, and leave requests efficiently through a centralized platform. Duties are assigned based on officer availability, workload, rank, duty timing, and traffic conditions, reducing manual effort and scheduling errors. The system uses the Round Robin method, workload balancing, and random duty allocation to ensure fair distribution and avoid bias. High-traffic areas are assigned to experienced officers for better traffic control. Administrators can manage officer records, locations, attendance, and schedules easily. Overall, the system improves transparency, coordination, workload management, and operational efficiency in traffic management activities.

ADVANTAGES

- Reduces manual effort and saves time in duty scheduling and management.
- Ensures fair duty distribution and balances workload among officers.
- Avoids favoritism and minimizes human errors in duty allocation.
- Improves coordination, transparency, and efficiency in traffic management operation.



International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

IV. SYSTEM ARCHITECTURE

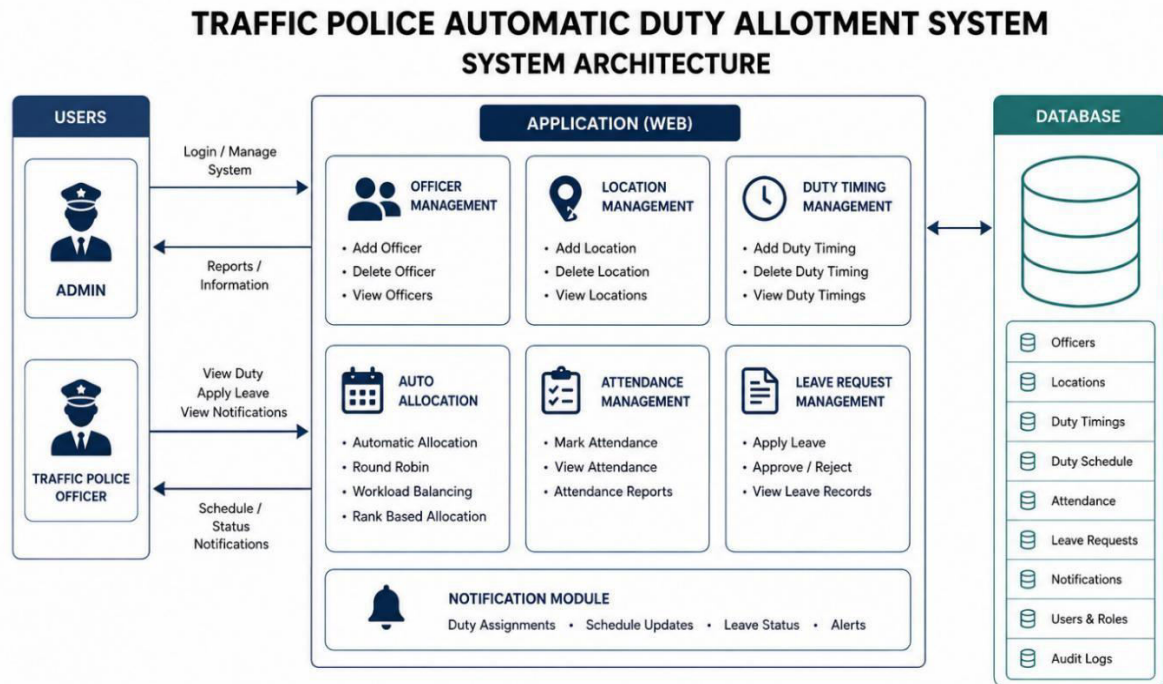


Fig No: 4.1

V. MODULE DESCRIPTION

- Requirement Analysis
- Technology Used
- System Interface Design
- Duty Allocation Process
- Attendance and Leave Management
- Notification System
- Testing

1. Requirement Analysis

The project aims to develop a web-based system for automatic traffic police duty allocation. It supports zone assignment, shift scheduling, workload balancing, attendance tracking, leave management, and notifications.

2. Technology Used

The system is built using Python and the Django framework. HTML, CSS, JavaScript, and SQLite are used for interface design and data storage.

3. System Interface Design

A user-friendly interface is provided for administrators and officers. Admins can manage officers, shifts, and duties, while officers can view schedules and notifications.

4. Duty Allocation Process

The system uses the Round Robin method for fair duty distribution and workload balancing. Duties are also assigned based on officer rank and area priority.

5. Attendance and Leave Management

The system tracks attendance and leave details. Officers on leave are automatically excluded from duty allocation.



International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

6. Notification System

Notifications are sent to officers about duty schedules and updates, improving communication and coordination.

7. Testing

The system is tested using different duty and shift scenarios to ensure accurate scheduling, attendance handling, and reliable duty allocation.

IMPLEMENTATION

Technologies Used

- Python and the Django framework for backend development.
- HTML, CSS, and JavaScript for user interface design.
- SQLite database for storing officer and duty records.
- Round Robin method for automatic duty allocation.

System Modules

- Admin module for managing officers, zones, shifts, attendance, and duties.
- Duty allocation module for automatic scheduling based on workload and availability.
- Attendance and leave module for accurate duty management.
- Notification module for schedule updates and reporting.

VI. RESULTS

1. LOGIN PAGE

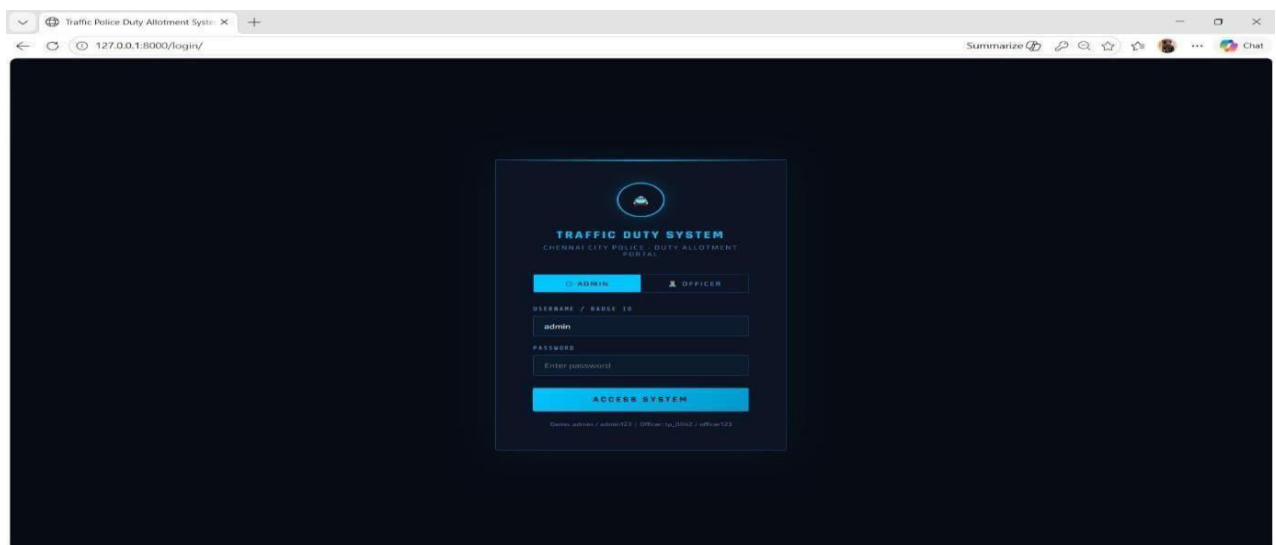


Fig No: 6.1



International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

2. ADMIN DASHBOARD

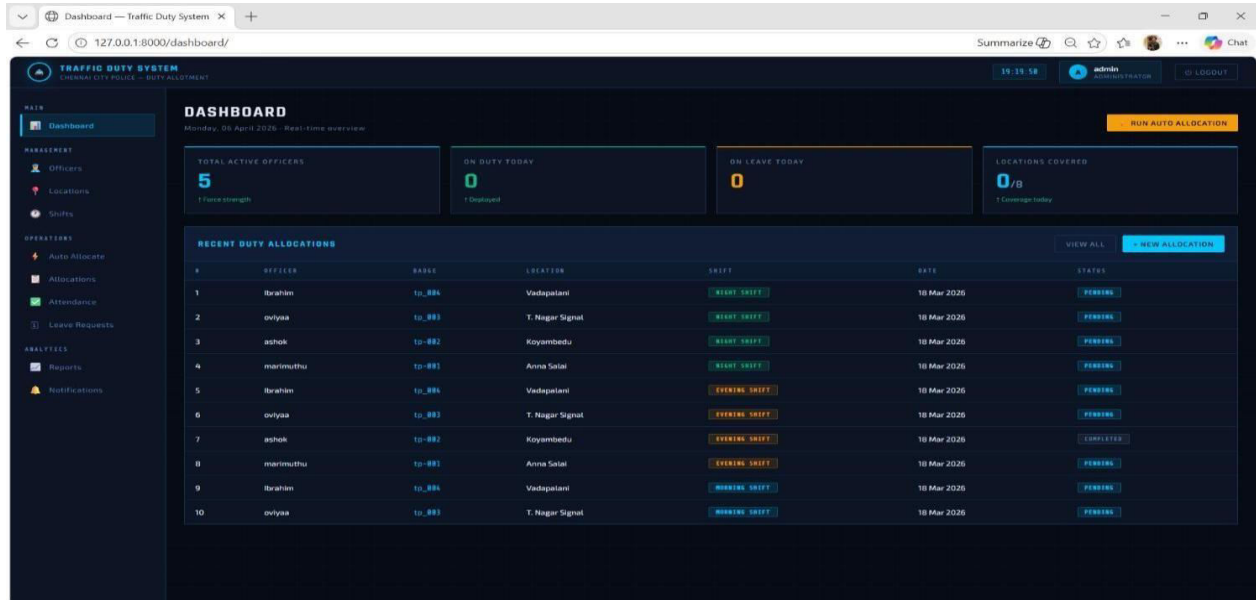


Fig No: 6.2

3. OFFICER ADD/DELETE

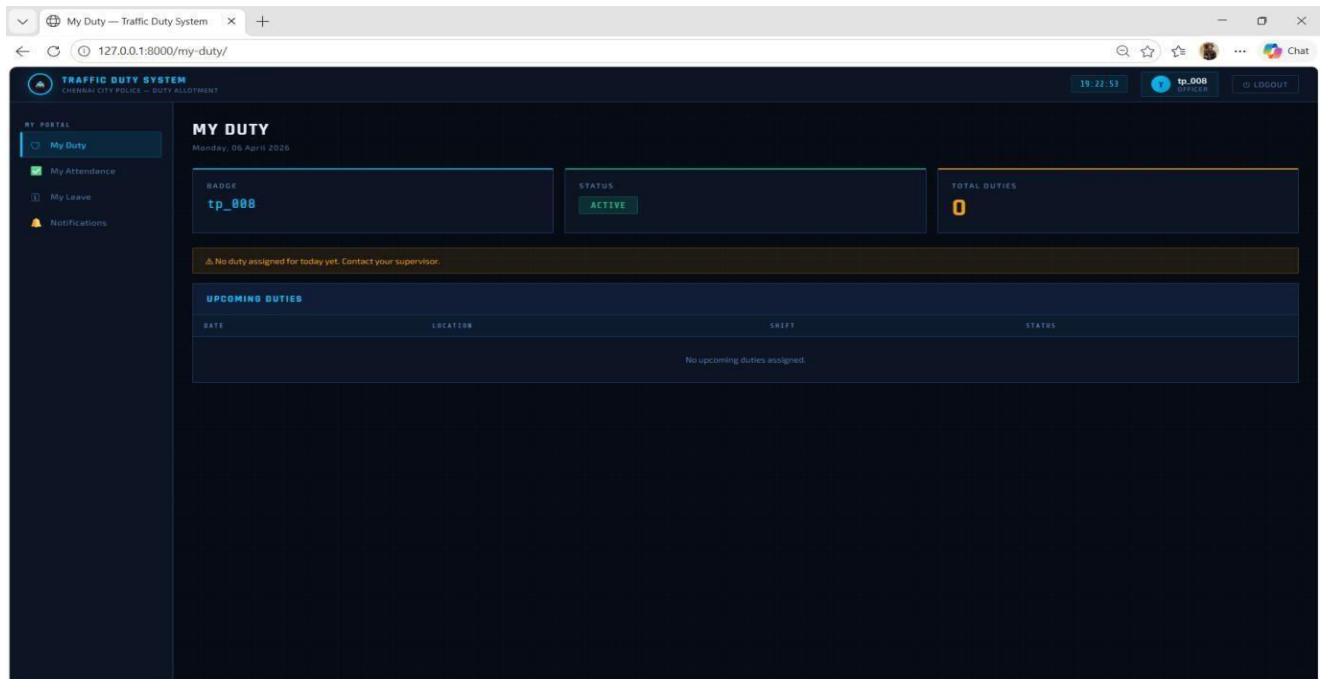


Fig No: 6.3



International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

4. AUTO DUTY ALLOCATION

The screenshot shows the 'OFFICERS' management page in the Traffic Duty System. It includes a sidebar with navigation options like Dashboard, Officers, Locations, Shifts, Auto Allocate, Allocations, Attendance, Leave Requests, Reports, and Notifications. The main content area displays an 'OFFICER ROSTER (5)' table with columns for ID, BADGE, NAME, RANK, ZONE, STATUS, TOTAL DUTIES, and ACTIONS. The roster lists five officers with their respective details and status.

ID	BADGE	NAME	RANK	ZONE	STATUS	TOTAL DUTIES	ACTIONS
1	tp_881	marimuthu	INSPECTOR	Central	ACTIVE	3	EDIT DEL
2	tp_882	ashok	DEPUTY COMMISSIONER	East	ACTIVE	3	EDIT DEL
3	tp_883	oviyaa	ASSISTANT COMMISSIONER	North	ACTIVE	3	EDIT DEL
4	tp_884	Ibrahim	INSPECTOR	North-East	ACTIVE	3	EDIT DEL
5	tp_885	ambu	SUB-INSPECTOR	North	ACTIVE	0	EDIT DEL

Fig No: 6.4

5. AUTO ALLOCATION

The screenshot shows the 'MY ATTENDANCE' page in the Traffic Duty System. It includes a sidebar with navigation options like My Portal, My Duty, My Attendance, My Leave, and Notifications. The main content area displays a summary of attendance for the current month, showing 1 present, 0 late, and 0 absent. Below this is an 'ATTENDANCE RECORDS' table with columns for DATE, STATUS, CHECK IN, and CHECK OUT. The record shows a single entry for 06 Apr 2026 with a status of PRESENT, check in at 8:24 p.m., and check out at 2 p.m.

DATE	STATUS	CHECK IN	CHECK OUT
06 Apr 2026	PRESENT	8:24 p.m.	2 p.m.

Fig No: 6.5



International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

6. OFFICER ATTENDANCE

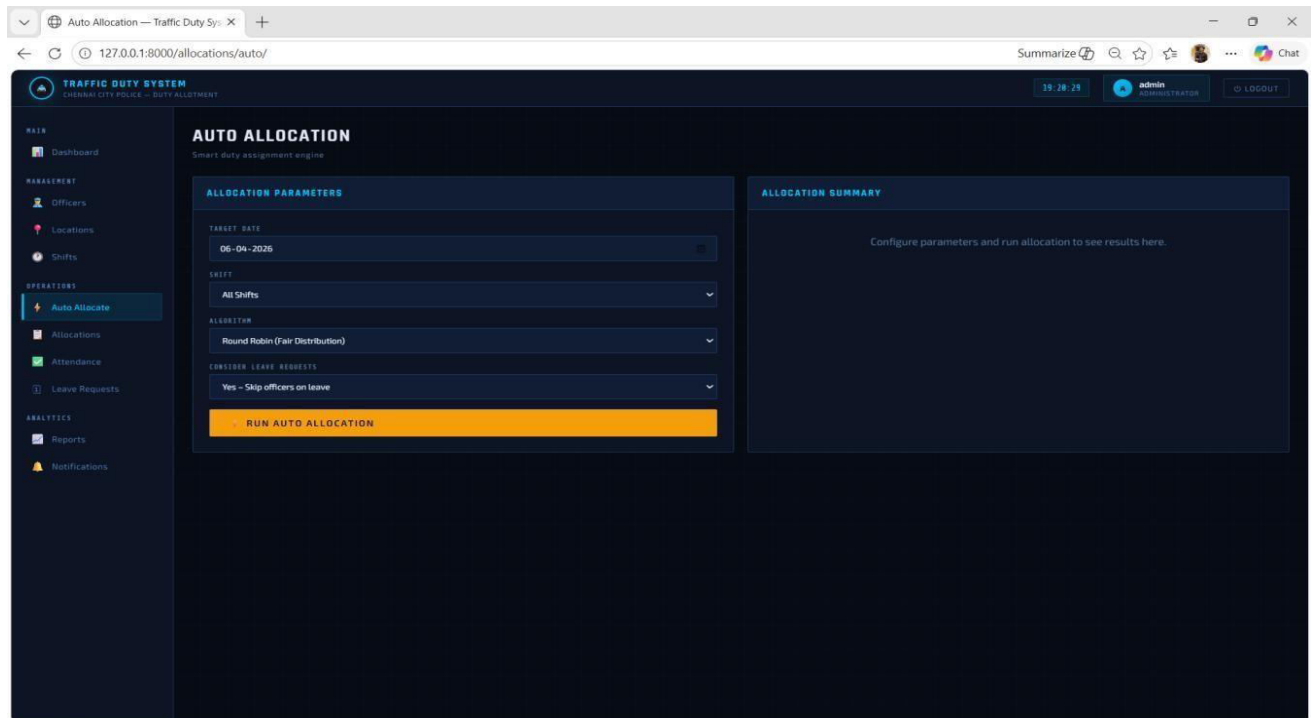


Fig No: 6.6

VII. CONCLUSION

The Traffic Police Automatic Duty Allotment System provides an efficient solution for managing and assigning duties to traffic police personnel in a structured and systematic manner. The system replaces traditional manual scheduling methods with an automated approach that ensures fair and balanced distribution of responsibilities among officers based on availability, shift timing, workload conditions, and location requirements. Overall, the proposed system improves operational efficiency, reduces administrative workload, and supports better traffic management by ensuring proper deployment of traffic police officers across different locations and shifts. The system also enhances communication between administrators and officers through notification and alert features. By automating the duty assignment process, the project minimizes manual errors, ensures fairness in workload distribution, and increases the reliability of traffic duty management. This software solution provides a secure, user-friendly, and efficient platform for managing traffic police operations in a smart and organized manner.

VIII. FUTURE ENHANCEMENTS

In future, the Traffic Police Automatic Duty Allotment System can be extended by developing a separate mobile application for traffic police officers and administrators. The mobile application will allow officers to view their duty schedules instantly from their smartphones without needing to access the web system through a computer. This will improve accessibility and make the system more convenient for daily use. The mobile application can provide real-time notifications about duty assignments, shift changes, and emergency deployment updates. Officers will also be able to mark attendance, apply for leave requests, and check location-based duty instructions directly through the mobile interface. This will reduce communication delays and improve coordination between administrators and officers.



International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

REFERENCES

- 1) H. A. Sakr and M. I. El-Affifi, "Intelligent Traffic Management Systems: A Review," *Nile Journal of Communication and Computer Science*, vol. 5, no. 1, pp. 12–20, 2023.
- 2) B. Shrestha, B. Singh, G. Darlami, and N. Upadhyaya, "AI Based Traffic Management System: Integrating Artificial Intelligence for Sustainable Urban Traffic Solutions," *International Journal of Educational Practices and Engineering*, vol. 3, no. 2, pp. 45–53, 2025.
- 3) D. Narchal, A. Singh, and M. Kaur, "AI-Based Intelligent Traffic Signal Management System: A Review," *International Journal of Electronics Automation*, vol. 4, no. 1, pp. 33–41, 2025.
- 4) V. Mandal, A. R. Mussah, P. Jin, and Y. Adu-Gyamfi, "Artificial Intelligence Enabled Traffic Monitoring System," *arXiv preprint arXiv:2006.14136*, pp. 1–10, 2020.
- 5) M. Treiber and A. Kesting, *Traffic Flow Dynamics: Data, Models and Simulation*. Berlin, Germany: Springer-Verlag, 2013.
- 6) N. Lanke and S. Koul, "Smart Traffic Management System," *International Journal of Computer Applications*, vol. 75, no. 7, pp. 19–22, Aug. 2013.
- 7) Rachana K. P., Aravind R., Ranjitha M., Spoorthi Jwanita, and Soumya K., "IoT Based Smart Traffic
- 8) Management System," *International Journal of Engineering Research & Technology (IJERT)*, vol. 10, no. 5, pp. 234–238, May 2021.
- 9) S. D. C., K. K. Zingade, A. R., and C. Amith, "Smart Traffic Management System," *International Research Journal of Engineering and Technology (IRJET)*, vol. 7, no. 6, pp. 1450–1454, Jun. 2020.



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 9940 572 462  6381 907 438  ijircce@gmail.com



www.ijircce.com

Scan to save the contact details