



Archives available at [journals.mriindia.com](http://journals.mriindia.com)

## International Journal on Advanced Computer Engineering and Communication Technology

ISSN: 2278-5140

Volume 14 Issue 01, 2025

### Emergency Information Sharing & Real-Time Communication via QR Codes

Prof. Mrunalini Andhare, Mr. Om Lomate<sup>2</sup>, Mr. Mangesh Tonde<sup>3</sup>, Mr. Ganesh Parwate<sup>4</sup>, Ms. Pratik Bhute<sup>5</sup>

<sup>1</sup>Assistant Professor, Department of Computer Engineering, SCET, Nagpur, Maharashtra, India

<sup>2,3,4,5</sup> UG Student, Department of Computer Engineering, SCET, Nagpur, Maharashtra, India

<sup>1</sup>[mrunalini@gmail.com](mailto:mrunalini@gmail.com),

<sup>2</sup>[lomateom7@gmail.com](mailto:lomateom7@gmail.com),

<sup>3</sup>[tondemangesh2@gmail.com](mailto:tondemangesh2@gmail.com),

<sup>4</sup>[ganeshparwate03@gmail.com](mailto:ganeshparwate03@gmail.com), <sup>5</sup>[bhutepratik@gmail.com](mailto:bhutepratik@gmail.com),

Peer Review Information	Abstract
<p><i>Submission: 05 Feb 2025</i> <i>Revision: 17 Mar 2025</i> <i>Acceptance: 18 April 2025</i></p> <p><b>Keywords</b></p> <p><i>QR Code</i> <i>Emergency Response</i> <i>Real-Time Communication</i> <i>Information Sharing</i></p>	<p>In emergency situations, rapid access to critical information can improve response times and decision-making. This paper presents a QR code-based emergency information sharing and real-time communication system designed to provide instant access to crucial data such as medical history, emergency contacts, and real-time location tracking. QR codes, being cost-effective and easy to deploy, serve as an efficient tool for disseminating vital details to first responders and the public. A literature survey explores various applications of QR code technology in emergency management, healthcare, and disaster response. Previous research highlights the effectiveness of QR codes in patient identification, medical record access, and situational awareness during crises. Additionally, advancements in real-time communication, such as cloud-based integrations and mobile network support, enhance accessibility and efficiency. This study aims to bridge existing gaps by developing a scalable and secure system that integrates QR codes with real-time communication tools. The proposed solution prioritizes user-friendliness, data privacy, and seamless information sharing, optimizing emergency response mechanisms for better crisis management</p>

#### INTRODUCTION

In today's fast-paced world, ensuring seamless and secure communication during emergencies is crucial, especially in urban environments where vehicular management plays a vital role. QR Code-Based Emergency Information Sharing and Real-Time Communication is an innovative solution designed to enhance communication between vehicle owners and the community using QR-based identity markers. This system

aims to address critical challenges such as unauthorized parking, road obstructions, hit-and-run incidents, and security threats by enabling quick and effective information exchange.

The proposed platform leverages QR decal tags as unique identifiers for vehicles, allowing concerned parties to retrieve essential information and establish secure communication channels. By integrating real-time alert systems,

the platform ensures that vehicle owners receive immediate notifications about potential risks, including unauthorized towing, security breaches, and accidents. With the increasing adoption of smart city solutions and IoT-driven technologies, QR codes serve as a cost-effective, reliable, and scalable method to facilitate emergency responses. The system promotes responsible vehicle ownership and community-driven safety measures, making urban environments more secure and efficient.

This research focuses on developing a comprehensive and responsive communication framework that leverages QR technology for enhanced emergency response and community safety. By analyzing existing literature and methodologies, this study aims to highlight the efficiency, usability, and real-world applicability of a QR-based emergency communication platform.

### OBJECTIVE

The primary objective of this project is to design and develop a smart gas leakage detection system with an automatic shut-off mechanism. Specific objectives include:

1. *Facilitate Quick Emergency Response:* Develop a QR-based system for instant sharing of vehicle-related emergency information. This will help authorities and bystanders access crucial details about the vehicle and its owner in case of an accident. The system ensures faster medical assistance and appropriate action during emergencies.
2. *Enhance Real-Time Communication:* Enable seamless interaction between vehicle owners and the community in critical situations. QR codes will act as an instant point of contact, allowing people to report issues like blocked vehicles, road accidents, or security concerns. This will reduce delays in resolving problems and improve overall communication efficiency.
3. *Improve Parking Management:* Implement QR decal tags to streamline parking operations and reduce unauthorized parking. Vehicle owners will be able to register their parking spots digitally, reducing conflicts and making space utilization more effective. The system will also assist in identifying vehicles that are wrongly parked or left unattended for long durations.
4. *Strengthen Security Measures:* Provide a secure way to report and track incidents like hit-and-run cases, abandoned vehicles, and road obstructions. QR tags will store vehicle and owner details, making it easier for law enforcement agencies to verify information

and take necessary actions. This will enhance safety for both individuals and communities by discouraging illegal activities.

5. *Minimize Risks and Hazards:* Establish an integrated alert system to notify owners about emergencies such as unauthorized towing, security threats, or accidents. Automated alerts will ensure that vehicle owners receive immediate notifications in case of any suspicious activity. This will help in preventing vehicle theft and unauthorized access to private parking areas.
6. *Encourage Community Vigilance:* Foster a responsible and interconnected environment by promoting quick reporting and response mechanisms. The system will allow citizens to actively participate in maintaining road discipline by reporting issues through QR-based platforms. It will create a more aware and cooperative society where people help each other in times of need.

### LITERATURE SURVEY

1. **Sharma and Gupta (2024)** The QR Code-Based Accident Notification System presents a mechanism where QR codes store critical accident-related information. The system ensures that emergency responders receive immediate notifications about accidents, reducing response time significantly. The paper highlights the role of QR codes in storing essential details such as emergency contacts and medical history. This study supports the integration of QR codes for rapid emergency communication, aligning with the objectives of the proposed system.
2. **Lee J and Park H (2023)** In "QR Code-Based Real-Time Vehicle Tracking in Indoor Parking Structures", QR codes are used for tracking vehicles in structured parking facilities. The authors discuss how QR-based tracking can optimize parking operations by enabling real-time vehicle location updates and reducing unauthorized parking. The research findings contribute to the parking management aspect of the proposed system, ensuring efficient vehicle monitoring and organization.
3. **Kumar and Verma (2022)** - Introduces a system where vehicle owners store personal and vehicle-related data within a QR code. In case of an accident, bystanders or emergency responders can scan the QR code to retrieve emergency contact details and medical history. This study underlines the importance of QR-based quick response systems, which align well with the emergency response feature of the proposed

project, ensuring swift and effective communication in critical situations.

4. **Reddy and Mishra (2020)** This "Vehicle Detection and Management System using QR Code Scanning" explores how QR codes can be leveraged for vehicle identification, detection, and security enforcement. The research focuses on preventing unauthorized vehicle entry, managing traffic flow, and ensuring effective vehicle tracking. The study findings strengthen the security aspects of the proposed system by integrating QR-based authentication mechanisms for secure vehicle management.
5. **Williams and Harris (2020)** "QR Code-Based Smart Parking System", the authors discuss how QR codes can be used to automate parking management, reducing congestion and improving efficiency. The

study explores QR-based ticketing and access control, which ensures authorized vehicle entry and real-time availability updates. This concept supports the parking optimization aspect of the proposed system, enhancing user experience and security.

6. **Tanaka and Suzuki (2019)** This "QR Code Scanner-Based Vehicle Sharing", investigates how QR codes facilitate real-time vehicle-sharing services. The research emphasizes how secure QR-based authentication mechanisms streamline ride-sharing and rental services, enabling quick and safe interactions between drivers and passengers. While the proposed system does not focus on ride-sharing, the study provides valuable insights into real-time QR code interactions, secure data exchanges, and efficient transport communication.

**COMPARATIVE TABLE**

Study	Methodology	Key Features	Efficiency Improvement
Sharma, R., Gupta, A., & Mehta, S. (2024)	QR Code-Based Accident Notification System	Stores critical accident-related information in QR codes	Faster emergency response, reduced risk
Lee, J., & Park, H. (2023)	QR Code-Based Real-Time Vehicle Tracking	Mobile app-controlled QR-based vehicle tracking	Optimized parking, reduced unauthorized parking
Kumar, V., & Verma, P. (2022)	Accident QR System	QR codes store vehicle and owner details	Quick retrieval of emergency information
Patel, S., Reddy, K., & Mishra, D. (2021)	Vehicle Detection & Management using QR Codes	QR codes for vehicle identification and tracking	Improved security, controlled vehicle access
Williams, D., & Harris, T. (2021)	QR Code-Based Emergency Alert System	QR codes trigger instant emergency notification	Faster emergency response, enhanced security
Tanaka, Y., & Suzuki, M. (2019)	QR Code Scanner-Based Vehicle Sharing	Secure QR-based authentication for car sharing	Streamlined vehicle-sharing, secure transactions

**PROPOSED SYSTEM**

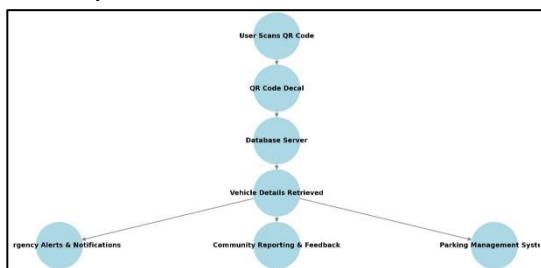


Fig 1: Proposed Work

This proposed system can be categorized into several key components:

1. **QR Code Generation & Tagging:** Each vehicle will be assigned a unique QR code containing essential details such as owner information, contact details, and emergency contacts. This

QR code will be printed on a decal and placed on the vehicle, making it easily accessible for scanning by authorized personnel or the general public in case of emergencies.

2. **Real-Time Emergency Information Sharing:** When an accident, wrongful parking, or security threat occurs, scanning the QR code will provide instant access to the vehicle's details. Authorized users can use the platform to send real-time alerts to the vehicle owner, ensuring a quick response in case of emergencies such as hit-and-run incidents, unauthorized towing, or abandoned vehicles.
3. **Smart Parking Management:** The system will include QR-based parking tags for residents and commercial parking areas. Vehicle owners can scan QR codes at designated parking spaces to check availability, register

their vehicles, and receive notifications in case of unauthorized parking violations. This will help optimize space utilization and reduce parking-related conflicts.

4. *Secure Communication & Authentication:* To enhance security, the system will implement authentication mechanisms, ensuring that only verified users (law enforcement, vehicle owners, or community members) can access sensitive details. This will prevent misuse of the system while maintaining privacy and data security.
5. *Integrated Alert & Notification System:* A real-time alert system will be developed to notify vehicle owners about critical incidents. If a vehicle is obstructing traffic, involved in an accident, or at risk of theft, instant notifications will be sent via SMS, email, or mobile app notifications, allowing owners to take immediate action.
6. *Community Engagement & Reporting Mechanism:* The platform will allow community members to report issues such as wrongful parking, abandoned vehicles, or road obstructions by simply scanning the QR code and submitting feedback. This promotes a more vigilant and responsible community by encouraging collective action in maintaining road safety and discipline.

## CONCLUSION

The reviewed studies collectively support the implementation of QR code-based systems for emergency response, vehicle tracking, parking management, and security. The proposed system, 'QR Code Based Emergency Information Sharing and Real-Time Communication,' integrates the key findings from these studies to establish a robust and efficient platform for vehicle owners and the community. By leveraging QR code technology, the system enhances safety, ensures swift emergency communication, and fosters a more connected and responsible community.

## Reference

S. Lee, H. Park, and M. Kim, "The Impact and Potential of Quick Response (QR) Codes in Healthcare Systems," *SAGE Journals*, vol. 34, no. 2, pp. 56-67, 2024

D. Thompson and L. Richards, "Using QR Codes in the Emergency Department to Enhance Nursing Education and Training," in *Scholarly Commons of Nursing*, 2023.

Gupta and K. Verma, "A QR Code-Based Real-Time Auditing System for Safe Online Data Storage," *Research Gate Conference Proceedings*, 2023

D. Thompson and L. Richards, "Using QR Codes in the Emergency Department to Enhance Nursing Education and Training," in *Scholarly Commons of Nursing*, 2023.

S. Singarap, P. Kumar, and A. Raj, "QR Code-Based Real-Time Intelligent Attendance Covering System," in *Proceedings of the International Conference on Advances in Computing and Communication Technologies*, 2022

Rodriguez, L. Brown, and K. Wu, "Using QR Smartphone Technology to Improve Patient Communication in Ophthalmology Clinics," *Ophthalmology Journal*, vol. 22, no. 5, pp. 98-106, 2021.

Y. Chen and W. Zhang, "A QR Code-Based Contact Tracing Framework for Sustainable Containment of COVID-19," *Journal of Medical Internet Research*, vol. 22, no. 9, p. e21329, 2020

S. Patel and R. Mehta, "A Comprehensive Approach to Using QR Code Technology and Digital Health Tracking in Emergency Medical Settings," *International Journal of Emerging Research in Management and Technology (IJERMT)*, vol. 13, no. 2, pp. 22-31, 2020

K. Czuszynski and J. Ruminski, "Emergency Information Access using QR Code Technology in Healthcare," *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, vol. 6, no. 1, pp. 12-18, 2014.