A Capstone Project Report On

"AlertNet: Police Alert and Reporting System for Lost and Wanted Individuals"

IN PARTIAL FULFILMENT OF MASTER OF COMPUTER APPLICATION



INDIRA COLLEGE OF ENGINEERING AND MANAGEMENT

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I would like to acknowledge that this project was completed entirely Mr. Kiran Bajirao Patil and not by someone else.

Kiran Bajirao Patil FY MCA

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1. INTRODUCTION

In today's fast-paced and interconnected world, the dissemination of critical information, especially regarding missing or wanted individuals, is paramount. Existing systems rely on traditional media, such as newspapers, television, or posters, which are often inefficient, delayed, and unable to cover a wide range of the population effectively. These systems do not facilitate immediate interaction between citizens and law enforcement authorities, leading to inefficiencies in tracking and gathering information.

1.1 Existing System

In many communities, current reporting systems for crime and safety concerns often rely on traditional methods such as phone calls or in-person visits to police stations. These systems can have several limitations:

- 1. **Delayed Response**: Reports made via phone or in-person may not be relayed
 - a. quickly to the necessary units
- 2. **Limited Accessibility**: Not all citizens have equal access to reporting methods, especially in emergencies.
- 3. Lack of communication: There is often a disconnect between law enforcement and the community, leading to mistrust and inefficiencies.
- 4. **Data Management Challenges**: Manual reporting can lead to errors, lost information, and difficult in data analysis.

1.2 Need for the system

- 1. **Improved Communication**: A dedicated platform can enhance the dialogue between citizens and law enforcement, fostering community trust.
- 2. **Real-Time Reporting**: Instant alert and updates can help police respond more swiftly to incidents, potentially preventing further crime.
- 3. **Accessibility**: A digital platform ensures that all community members can report issues conveniently, regardless of their location or time of day.
- 4. **Community Engagement**: Encouraging citizens to participate actively in their own safety builds a stronger, more vigilant community.

1.3 Scope of work

The primary scope of this project is to develop an advanced web-based system called AlertNet, designed to facilitate real-time communication between police departments and the public. This system will enable:

- Police officers to broadcast alerts for missing or wanted individuals.
- Citizens to report sightings or relevant information directly to the authorities.
- Enhanced safety through fast and streamlined two-way communication.

The system will also include:

- Secure login and registration for both police officers and citizens.
- Real-time notifications and updates.
- A structured interface for tracking reports and responses.

The project will require backend development with secure database management, a user-friendly frontend interface, and the integration of technologies like Spring Boot for the backend, PostgreSQL for the database, and React.js for the frontend.

1.4 Operating Environment – Hardware and Software Detail description of technology Used

1. Hardware Requirements:

The platform is designed to be lightweight and can operate on any modern computer with a standard configuration (4GB RAM or more). The system is also deployable on cloud-based infrastructure.

2. Software Requirements:

- Web Browser for accessing the system's web-based interface.
- Operating System: The system can operate on any OS, such as Windows, Linux, or macOS.

3. Technology Stack:

- Backend: Java (Spring Boot).
- Frontend: React.js for the user interface, Tailwind CSS for styling.
- **Database**: PostgreSQL for handling data storage, retrieval, and management.
- **Development Tools**: Eclipse/IntelliJ IDEA, Visual Studio Code, and Thunder Client/Postman for API testing.

2. PROPOSED SYSTEM

2.1 Proposed System

The proposed system, "AlertNet: Police Alert and Reporting System for Lost and Wanted Individuals", will offer a real-time, centralized platform to solve the current inefficiencies in alert broadcasting and reporting for law enforcement. AlertNet will allow police officers to:

- Instantly broadcast alerts to the public about missing or wanted individuals.
- Update alerts based on new information, ensuring real-time tracking.

Citizens will be able to:

- Receive alerts on their devices and respond immediately.
- Submit reports or sightings through a simple, user-friendly interface.

The system will consist of various modules including user authentication, alert broadcasting, citizen reporting, notification management, and a centralized database to store all relevant data securely.

2.2 Aim & Objectives of the System

The objectives of AlertNet are as follows:

- **Improved Response Times**: To reduce delays in broadcasting important alerts and receiving responses from the public.
- **Streamlined Communication**: To create a seamless two-way communication channel between law enforcement agencies and the public.
- Real-Time Alerts: To ensure that all citizens have access to real-time information regarding missing or wanted individuals, enabling faster action.
- **Effortless Reporting**: To simplify the process of reporting vital information by citizens through an intuitive interface, increasing the chances of resolving cases efficiently.
- **Public Safety**: To enhance overall public safety by making the alert system more effective and expanding its reach.

2.3 User Requirements

1. Police Users:

- **Secure Registration /Login**: Police officers need secure access to the platform to create and manage alerts.
- **Broadcast Alerts**: Officers must be able to broadcast details of missing/wanted individuals quickly.

- **Alert Management**: The system should allow officers to update or cancel alerts as needed.
- **View Reports**: Officers need access to reports submitted by citizens and the ability to take actions based on these reports.

2. Citizen Users:

- Easy Registration/Login: Citizens should be able to register or log in securely to receive alerts.
- **Submit Reports**: Citizens should be able to easily submit any information or sightings about missing/wanted individuals, including uploading evidence [optional] (e.g., photos, videos).
- Track Reported Alerts: Citizens should be able to view the status of alerts they have responded to or contributed information towards.

3. System Requirements:

- **Security**: The system must be secure to prevent unauthorized access and ensure data privacy.
- **Performance**: The system should handle multiple users and large volumes of data without performance degradation.
- **Scalability**: The platform should be scalable to accommodate future expansion and additional features.
- **Usability**: The interface should be user-friendly and accessible to a wide range of users (both tech-savvy and non-tech-savvy).

3. Analysis & Design

3.1 Module Hierarchy Diagram

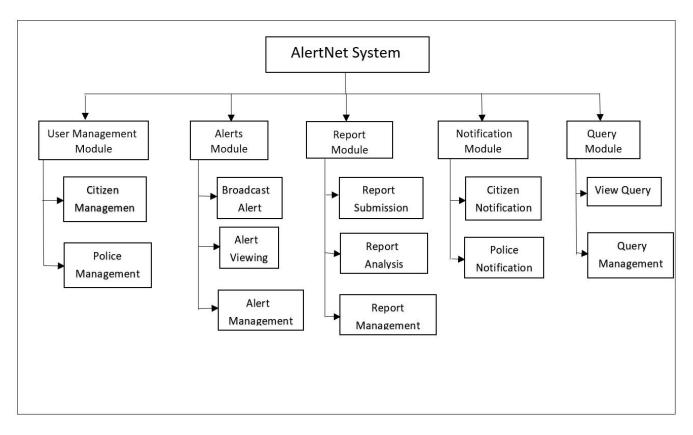


Figure 3.1 – Module Hierarchy Diagram of AlertNet: Police Alert and Reporting System for Lost and Wanted Individuals

This modular structure improves public safety by organizing tasks systematically, ensuring no critical detail is missed.

Each module focuses on a specific functionality to streamline communication and collaboration between citizens and police.

- The User Management Module forms the foundation, as it manages user roles.
- Alerts, reports, notifications, and queries flow seamlessly across the system, ensuring efficient information exchange.

3.2 ER Diagram

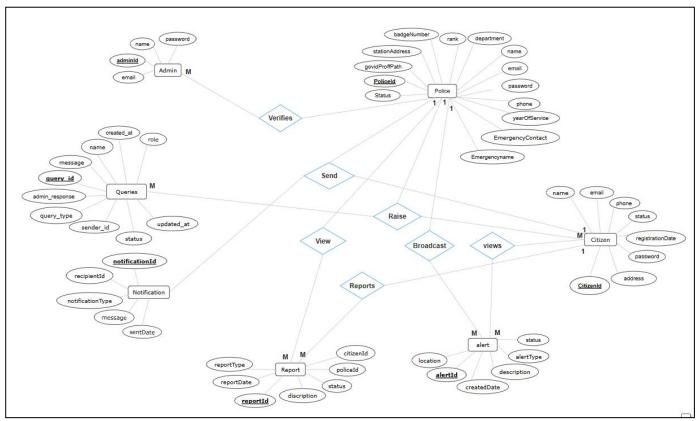


Figure 3.2 – ER Diagram of AlertNet: Police Alert and Reporting System for Lost and Wanted Individuals

This diagram represents an Entity-Relationship (ER) Diagram for the AlertNet System. It models the relationships between entities in the system. Here's a detailed explanation of its components: This diagram showcases how entities interact within the AlertNet System to ensure seamless communication and collaboration between citizens, police, and administrators.

3.3 Class Diagram

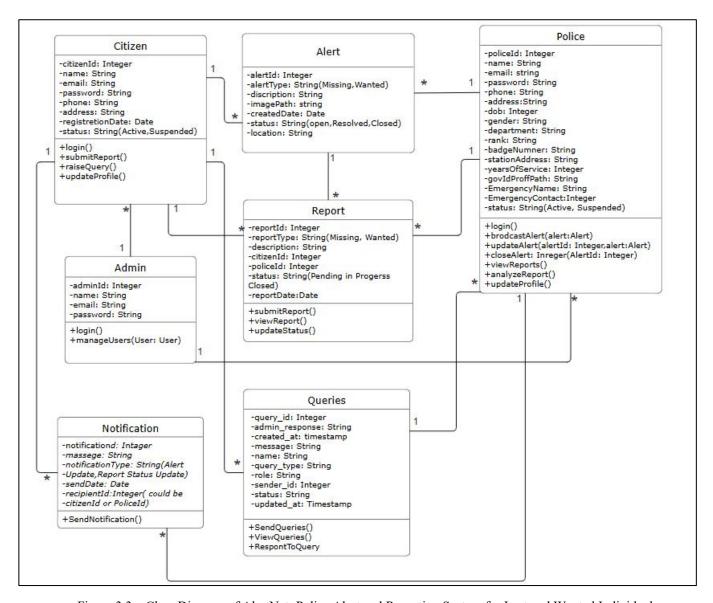


Figure 3.3 – Class Diagram of AlertNet: Police Alert and Reporting System for Lost and Wanted Individuals

This diagram represents a Class Diagram for the AlertNet System. It models the system's structure by defining classes, their attributes, operations, and relationships. Here's a detailed explanation:

This class diagram illustrates how the AlertNet System manages citizens, police, and admins while handling reports, alerts, queries, and notifications. Each class is well-structured with its specific attributes and methods, ensuring modularity and clarity in the system's design.

3.4 Use Case Diagram

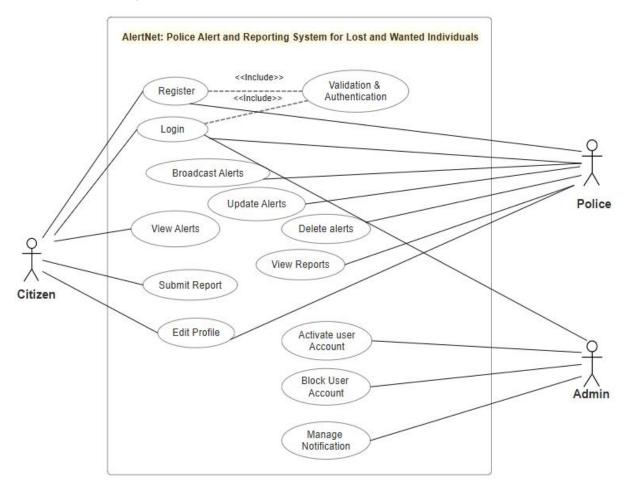


Figure 3.4 – Use Case Diagram of AlertNet: Police Alert and Reporting System for Lost and Wanted Individuals

The diagram is a Use Case Diagram for a system called AlertNet. Let's break down what it represents:

- Include: The "Register" use case includes a smaller use case called "Validation & Authentication," which handles the process of verifying user credentials.
- Association: Lines between actors and use cases represent associations. For example, a citizen can "Submit Report" or "View Alerts."

Overall, the AlertNet system appears to be designed for:

- Citizen Engagement: Allowing citizens to report incidents and receive important alerts.
- Emergency Response: Enabling quick dissemination of critical information to relevant authorities.
- Community Safety: Enhancing community awareness and potentially reducing crime rates.

3.5 Activity Diagram

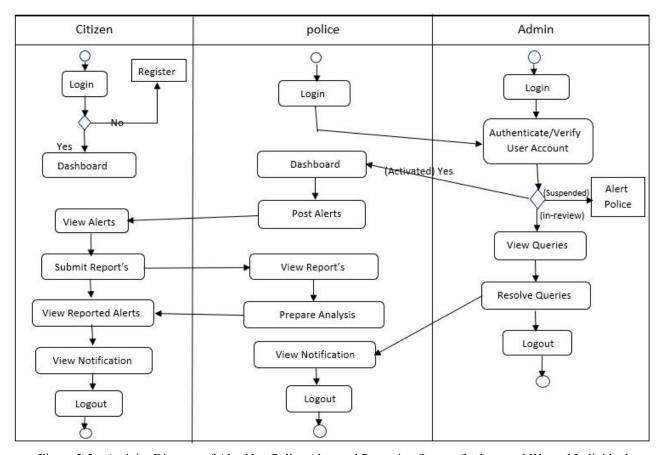


Figure 3.5 – Activity Diagram of AlertNet: Police Alert and Reporting System for Lost and Wanted Individuals

The diagram depicts an Activity for a system, likely related to public safety or community reporting.

Let's break down the different sections and their functionalities

- The diamond shape indicates a decision point, where the system checks if a user account is activated or suspended.
- The rectangular boxes represent the functionalities or actions that can be performed within the system.
- The lines connecting Citizen, Police, Admin indicate the interactions between them.

Overall, this diagram illustrates how different actors interact with the system to perform various tasks related to public safety and community reporting.

3.6 Sequence Diagram

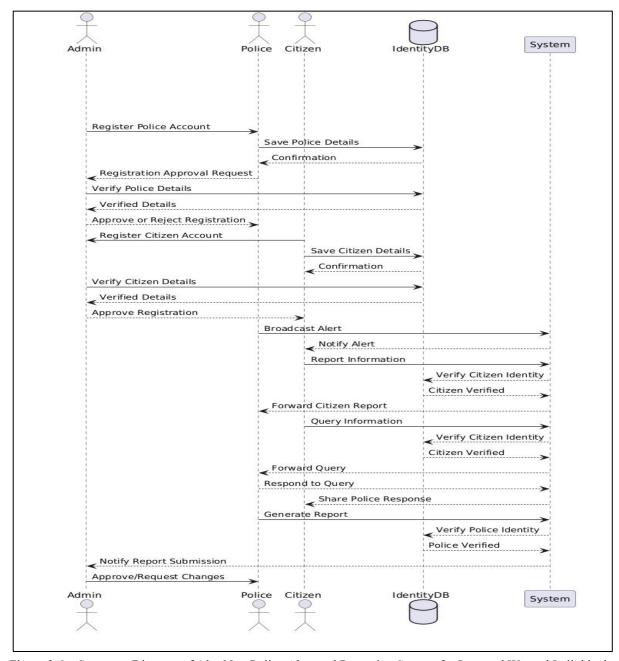


Figure 3.6 – Sequence Diagram of AlertNet: Police Alert and Reporting System for Lost and Wanted Individuals

The diagram is a sequence diagram, which is a type of interaction diagram used in software engineering to visualize the order of messages exchanged between different objects or components in a system. In this case, the system involves an Admin, Police, Citizen, IdentityDB, and the System itself.

3.7 Database Structure

1. Admin Table

Column	Data Type	Description	
id	bigint	Unique identifier for the admin (Primary Key).	
username	character varying	The admin's username used for login.	
password	character varying	The hashed password for the admin's account.	

2. User Table

Column	Data Type	Description
citizen_id	bigint	Unique identifier for the citizen (Primary Key).
address	character varying(255)	Residential address of the citizen.
email	character varying(255)	Unique email address for citizen login.
name	character varying(255)	Full name of the citizen.
password	character varying(255)	Hashed password for the citizen's account.
phone	character varying(255)	Unique phone number of the citizen.
account_status	character varying(255)	Current status of the account (e.g., activated).

3. Police Table

Column	Data Type	Description
police_id	bigint	Unique identifier for the police officer (Primary Key).
account_status	character varying(255)	Current status of the account (e.g., inreview, active).
address	character varying(255)	Residential address of the police officer.
badge_number	character varying(255)	Unique badge number assigned to the police officer.
department	character varying(255)	Department to which the police officer belongs.
dob	character varying(255)	Date of birth of the police officer.
email	character varying(255)	Unique email address for police login.
emergency_contact_name	character varying(255)	Name of the emergency contact person.

emergency_contact_phone	character varying(255)	Phone number of the emergency contact person.
emergency_contact_relation	character varying(255)	Relation of the emergency contact person to the police officer.
gender	character varying(255)	Gender of the police officer.
gov_id_proof_path	character varying(255)	File path of the government ID proof submitted by the police officer.
name	character varying(255)	Full name of the police officer.
password	character varying(255)	Hashed password for the police officer's account.
phone	character varying(255)	Unique phone number of the police officer.
rank	character varying(255)	Rank of the police officer in their department.
station_address	character varying(255)	Address of the police officer's assigned station.
years_of_service	integer	Number of years the police officer has served.

4. Alert Table

Column	Data Type	Description
alert_id	bigint	Unique identifier for the alert (Primary Key).
age	integer	Age of the person involved in the alert (if applicable).
caseid	character varying(255)	Unique case identifier for the alert.
case_status	character varying(255)	Current status of the case (e.g., Open, Resolved, Closed).
contact_name	character varying(255)	Name of the primary contact person for the alert.
contact_phone	character varying(255)	Phone number of the primary contact person.
crime_committed	character varying(255)	Description of the crime committed (if applicable).
danger_level	character varying(255)	Level of danger (e.g., High, Medium, Low).
date_of_report	date	Date the alert was reported.
description	character varying(255)	Detailed description of the alert.
eye_color	character varying(255)	Eye color of the person involved in the alert (if applicable).
gender	character varying(255)	Gender of the person involved in the alert.

hair_color	character varying(255)	Hair color of the person involved in the alert.
Height	double precision	Height of the person involved in the alert (in meters or centimeters).
image_path	character varying(255)	File path to the image associated with the alert.
last_seen_date	date	Date the person or object was last seen.
last_seen_location	character varying(255)	Location where the person or object was last seen.
Name	character varying(255)	Name of the person involved in the alert.
police_id	bigint	Identifier for the police officer handling the alert (Foreign Key).
secondary_contact_name	character varying(255)	Name of a secondary contact person.
secondary_contact_phone	character varying(255)	Phone number of the secondary contact person.
type	character varying(255)	Type of alert (e.g., Missing Person, Wanted Criminal).
weight	double precision	Weight of the person involved in the alert (in kilograms).

5. Report Table

3. Keport Table			
Column	Data Type	Description	
report_id	bigint	Unique identifier for the report (Primary Key).	
message	character varying(1000)	Detailed message or description of the report.	
reported_time	timestamp	Timestamp indicating when the report was made.	
alert_id	bigint	Reference to the alert table, the alert associated with the report (Foreign Key).	
citizen_id	bigint	Reference to the user_details table, identifying the citizen who made the report (Foreign Key).	
police_id	bigint	Reference to the police_details table, identifying the police officer handling the report (Foreign Key).	

6.Notification Table

Column	Data Type	Description
notification_id	bigint	Unique identifier for the notification (Primary
		Key).
created_at	timestamp	Timestamp indicating when the notification was created.
is_read	boolean	Flag indicating whether the notification has been

		read (true/false).
message	character varying(255)	The content or message of the notification.
receiver_id	character varying(255)	The ID of the receiver (could be citizen or police).
sender_id	character varying(255)	The ID of the sender (could be admin or police).
sender_name	character varying(255)	The name of the sender.
sender_role	character varying(255)	The role of the sender (e.g., admin, police).

7.Query Table

7. Quei y Table		
Column	Data Type	Description
query_id	bigint	Unique identifier for the query (Primary Key).
admin_response	character varying(255)	The response provided by the admin to the query.
created_at	timestamp	Timestamp indicating when the query was created.
message	character varying(255)	The content or message of the query.
name	character varying(255)	The name of the sender of the query.
query_type	character varying(255)	The type of query (e.g., "alert query", "report query").
role	character varying(255)	The role of the person sending the query (e.g., citizen, police).
sender_id	bigint	The ID of the sender (foreign key reference).
status	character varying(255)	The current status of the query (e.g., "pending", "resolved").
updated_at	timestamp	Timestamp indicating when the query was last updated.

4. Development & Implementation- User Interface Design with Business logic

4.1 Landing Page

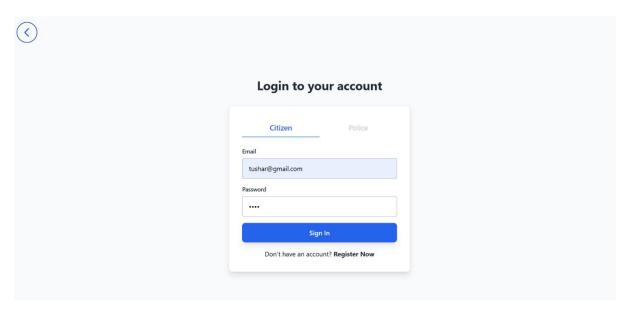


The Homepage component serves as the landing page of the application, providing a visually appealing introduction to the platform and navigation options.

• Learn More

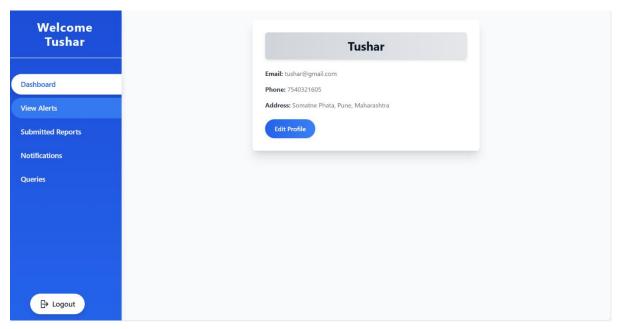


4.2 Citizen Login



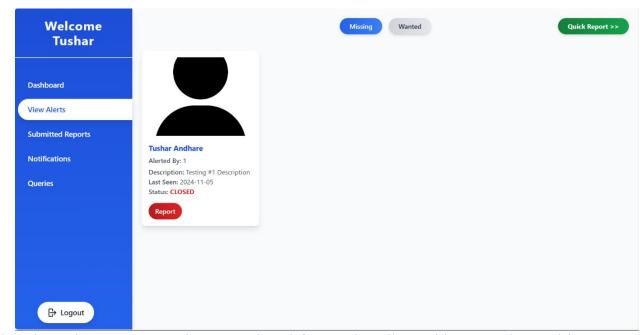
The SignIn component is a React functional component designed to handle the login functionality for citizens in the application.

Dashboard



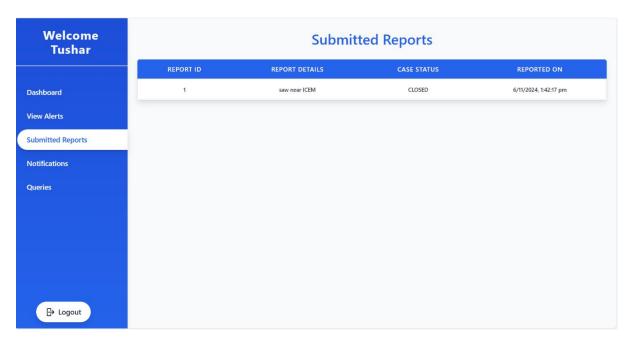
The Citizen Dashboard component serves as the main control panel for citizens within the application. It provides an interactive interface for managing personal profiles, viewing alerts, submitting and reviewing reports, handling queries, and managing notifications.

• View Alert



The View Alerts component is a React-based feature that allows citizens to view and interact with alerts in an application designed for public safety, such as AlertNet. It displays missing persons or wanted criminals based on the selected filter and provides detailed information, report generation, and image handling for each alert.

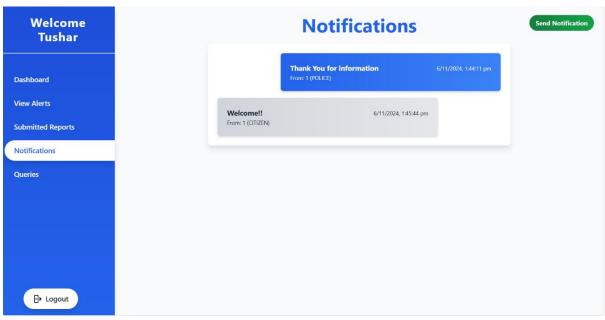
Submitted Reports



The Submitted Reports component displays a list of reports that a citizen has submitted in response to public safety alerts. It fetches the reports from an API endpoint and presents them in

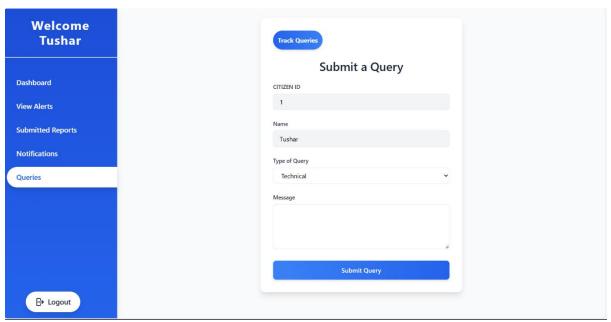
a table.

Notifications



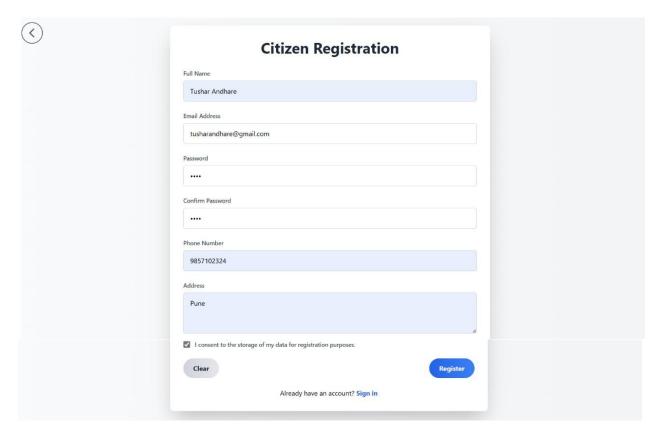
The Notification component manages the notifications system, allowing users to send and receive notifications.

Queries



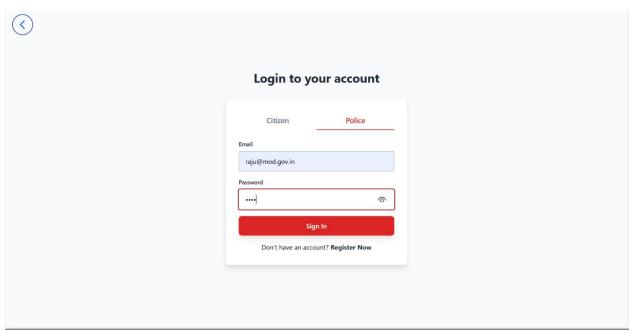
The Queries component provides users with an interface to submit queries to a support system and track their queries

• New Citizen Registration



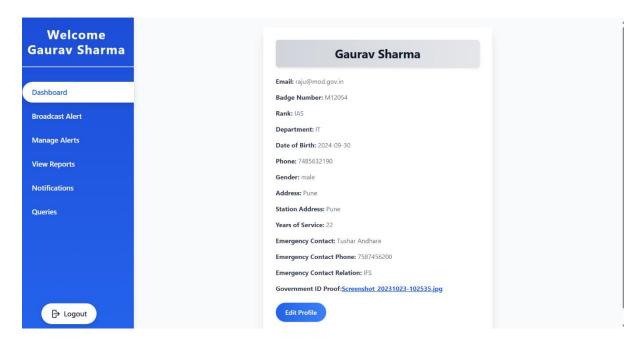
The Citizen Registration component to include in your project documentation or presentation: The Citizen Registration component provides an intuitive user interface for new users to register as citizens. It includes input fields for personal information, form validation, and smooth interaction with the backend API to create a new account.

4.3 Police Login



The SignIn component is a React functional component designed to handle the login functionality for both police officers in the application.

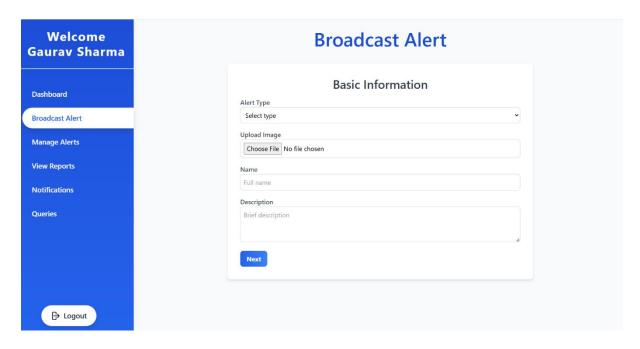
Dashboard



This is a React functional component for a Police Dashboard page. It serves as the main hub for police users to access various features within the application. Here's a breakdown of its structure

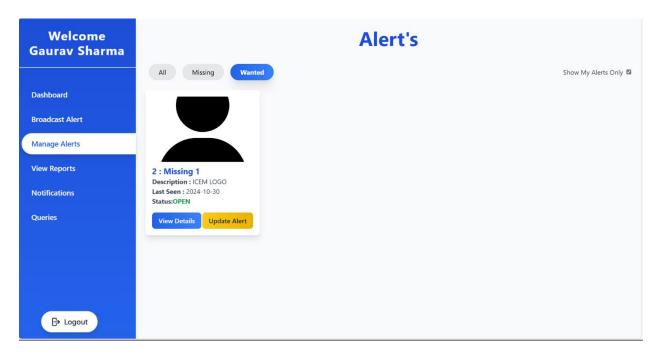
and functionality:

• Broadcast Alert



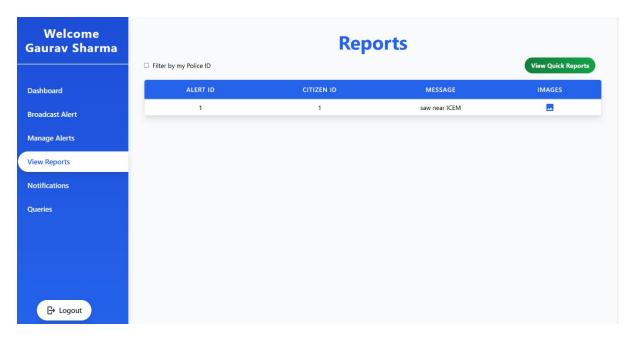
The Broadcast Alert component in your code is a multi-step form for submitting alerts related to public safety, such as missing persons or wanted criminals

Manage Alerts



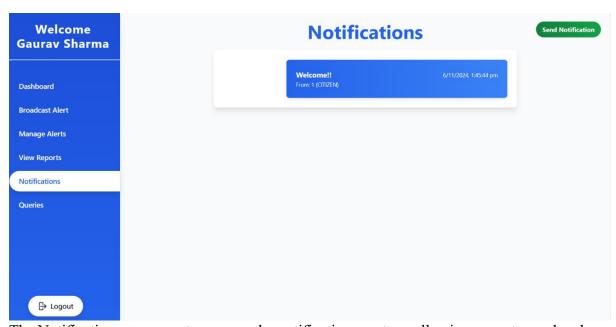
The Manage Alert component allows users to manage and view various alerts related to public safety. Here's a detailed description of its functionality.

• View Reports



The Reports component is an interactive, user-friendly interface for managing and viewing police reports. It allows officers to view detailed information about alerts, filter reports based on their police ID, and manage associated images. The component also includes a modal for viewing quick reports and downloading images in bulk.

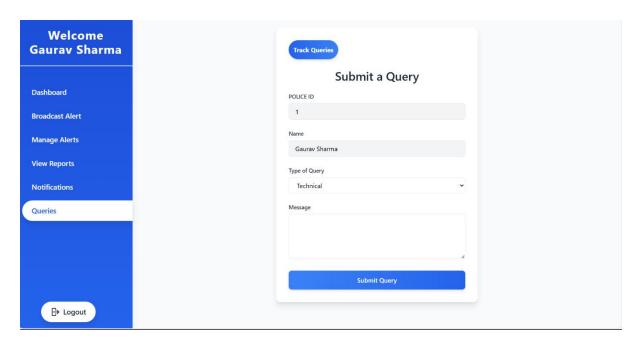
Notifications



The Notification component manages the notifications system, allowing users to send and

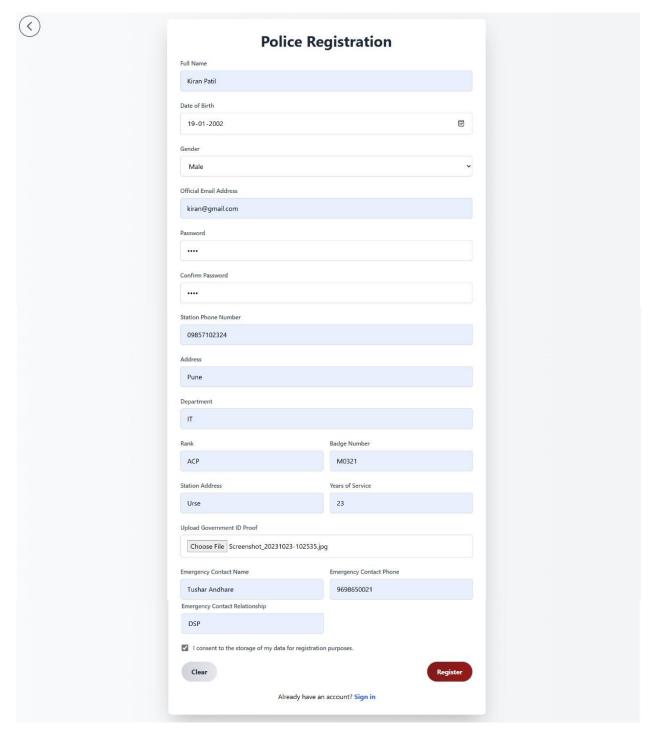
receive notification.

• Queries



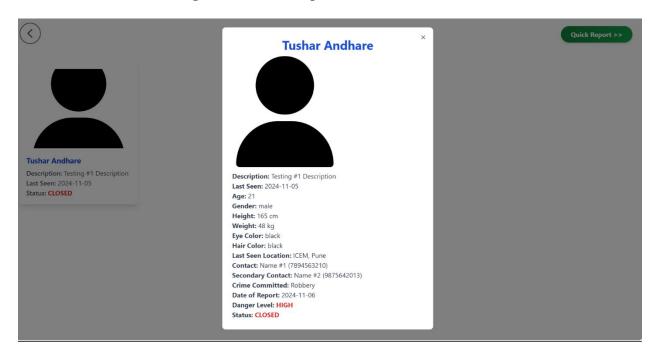
The Queries component provides users with an interface to submit queries to a support system and track their queries

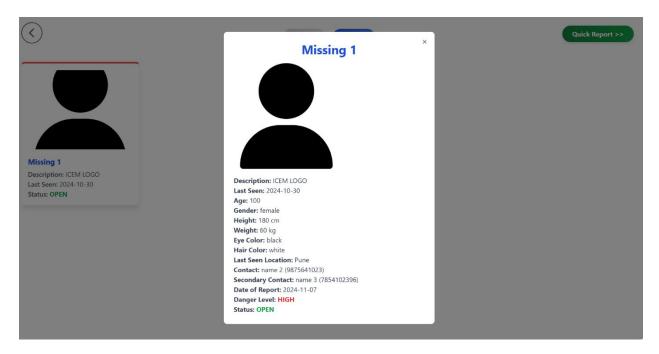
• New Police Registration



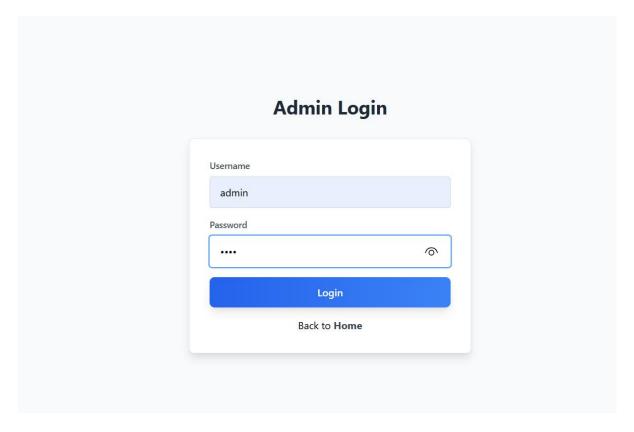
This is a React functional component for a Police Registration page. It allows police personnel to register by submitting their personal, professional, and emergency contact information along with a government ID proof.

4.4 Modal View of Missing and Wanted Report's



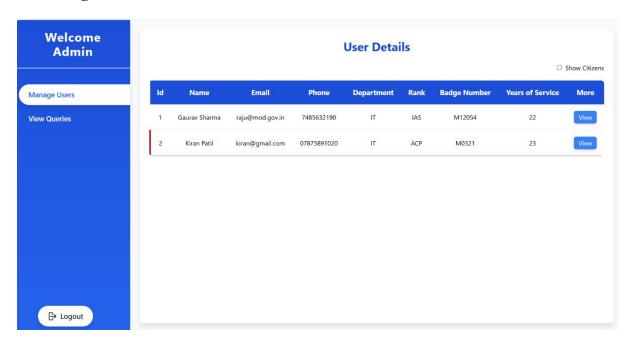


4.5 Admin Login



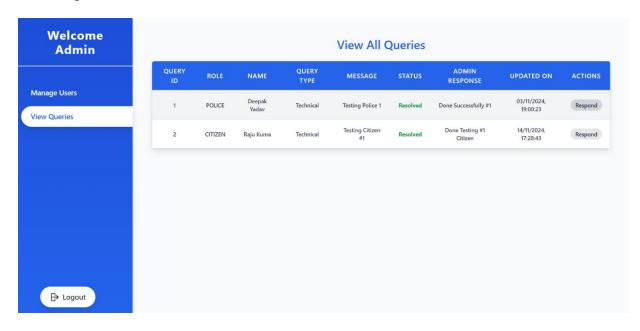
The Admin Login page is designed to handle the authentication process for administrators. The page ensures that only authorized admins can access secure areas of the application.

Manage Users



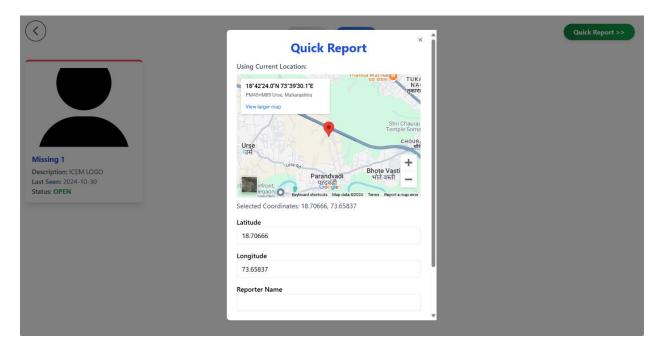
The Admin Users component provides an admin interface with a sidebar for navigation and a main content area that dynamically loads the User components based on the active route. This layout enables the admin user to easily manage users and queries while maintaining a clean and organized interface.

View Queries



The View Queries component provides an admin interface with a sidebar for navigation and a main content area that dynamically loads the User components based on the active route. This layout enables the admin user to easily manage users and queries while maintaining a clean and organized interface. The role prop ensures that this section is designed specifically for an admin user

4.6 Quick Report



The Quick Report component allows Citizens to quickly send details of sighting with all necessary details directly with single click.

5. Conclusion

The "AlertNet: Police Alert and Reporting System for Lost and Wanted Individuals" project serves as a testament to the role of technology in fostering public safety and efficient communication. By bringing together citizens, police, and administrators into a single, cohesive platform, AlertNet not only simplifies processes but also establishes a system of accountability and transparency. Its modular design, incorporating features like real-time alerts, report submissions, and user management, highlights its versatility in addressing various aspects of public safety.

The "AlertNet: Police Alert and Reporting System for Lost and Wanted Individuals" project aimed to enhance communication and collaboration between citizens and law enforcement. Through innovation technology and community engagement, the project sought to build trust, improve transparency, and streamline reporting processes.

In conclusion, "AlertNet: Police Alert and Reporting System for Lost and Wanted Individuals" is more than just a technological solution; it is a step toward creating a safer and more informed society. By addressing the critical need for efficient communication in public safety scenarios, it empowers both citizens and law enforcement, ensuring quicker responses and better management of emergencies. Its scalable and adaptable architecture positions AlertNet as a model for future innovations in public safety and community-oriented platforms.

6. Reference

- [1] Stack Overflow, "Background color in input and text fields," available: https://stackoverflow.com/questions/5617703/background-color-in-input-and-text-fields.
- [2] Lottie Files, "Animations: Expenses," available: https://lottiefiles.com/search?q=expenses&category=animations.
- [3] Freepik, "Free Images and Icons for website," available: https://www.freepik.com/
- [4] GitHub, "GitHub Homepage," available: https://github.com/.
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- [6] "Designing User-Centric Platforms for Rural Communities," Tech for Good Summit, 2023.