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Security Audit and Compliance (TCS -595)

AWAZ UTHAO

Submitted in partial fulfillment of the requirement for the V semester

B.TECH.CSE

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2025 - 2026

STUDENT'SDECLARATION

We, **MAYANK KANDPAL,VIJAY KUMAR, DEEPAK KARKI and SAURAV CHUPHAL**, here by declare the work, which is being presented in the project, entitled **AWAZ UTHAO** in partial fulfillment of the requirement for the award of the degree in V semester for the session **2025-2026**, is an authentic record of my own work carried out under the supervision of **MR. PRINCE KUMAR**, **GRAPHIC ERA HILL UNIVERSITY**.

The matter embodied in this project has not been submitted by me for the award of any other degree.

DATE:17/12/2025

……..

STUDENT SIGNATURE

CERTIFICATE

The project report entitled **AWAZ UTHAO** being submitted by **MAYANK KANDPAL** RollNo. **2361329**, **VIJAY KUMAR** RollNo. **2361580** and **DEEPAK KARKI** RollNo.**2361126** and **SAURAV CHUPHAL** RollNo . **2361495** to **GRAPHIC ERA HILL UNIVERSITY** ,Bhimtal Campus for the award of work carried out by them. They have worked under my guidance and supervision and fulfilled the requirement for the submission of report.

…… **…….....**

HOD

ACKNOWLEDGEMENT

We take immense pleasure in thanking Honorable **MR . PRINCE KUMAR**(Assistant Professor**,** CSE, GEHU Bhimtal Campus) to permit us and carry out this project work with his excellent and optimistic supervision. This has all been possible due to his novel inspiration, able guidance and useful suggestions that helped us to develop as a creative researcher and complete the research work, in time.

Words are inadequate in offering my thanks to GOD for providing me everything that we need. We again want to extend thanks to our President **PROF.(DR.)KAMALGHANSHALA**for providing us all infrastructure and facilities to work in need without which this work could not be possible.

Many thanks to Professor **PROF. A.K. NAIR** (Director, GEHU), **"MR. ANKUR SINGH BISHT"** (HOD, CSE, GEHU and other faculties for their insightful comments, constructive suggestions, valuable advice, and time in reviewing this thesis.

Finally, yet importantly, We would like to express my heartiest thanks to our beloved parents, for their moral support, affection and blessings. We would also like to pay mysincerethankstoallour friends and well-wishers for their help and wishes for the successful completion of this research.

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ABSTRACT

Awajuthao is a community safety and civic issue platform that helps local reporting and assistance byconnecting citizens report with the right departments and staff in their locality. It ensures structure and accountability through verified submissions, department routing, status tracking,

PROBLEM STATEMENT:- Today, local problem-reporting is scattered. People aren't sure who to contact, updates are unclear, and follow-up is slow. Reports get stuck, nearby issues remain hidden, and both citizens and departments lack a shared view of what's happening.
- Awaj uthao fixes these issues by centralizing report intake, adding location-aware guidance, and giving everyone clear, trackable progress with a helpful assistant on top.

TECH STACK:
FRONTEND:- React.js
BACKEND: - FastAPI
DATABASE: - SQLite
EXTERNAL : - Nominatim(for geocoding)

METHODOLOGY: Awajuthao streamlines the process of reporting and resolving local issues by using structured forms to capture essential details and automatically assigning cases to the appropriate departments, minimizing manual intervention. It incorporates an AI-powered assistant that provides users with precise, location-based information and updates, ensuring that citizens can confidently track their issues. The system includes a robust search feature, relying on Qdrant for indexing, with sensible fallbacks in place to find relevant reports based on proximity and keywords when vector search is unavailable, ensuring continuous access to useful data. Overall, Awajuthao enhances transparency, accelerates action, and provides clarity in addressing community concerns efficiently.

RESULT: Citizens submit and track issues with confidence; departments receive the right cases faster; staff get clearer context. The assistant reduces friction by giving quick, location-aware answers. Optional vector search makes it easy to find relevant local issues, and sensible fallbacks keep everything working even when some services are down.

CONCLUSION:Awajuthao is a practical, scalable way to raise, route, and resolve local problems. With structured reports, role-based views, and a friendly assistant, it brings transparency, speeds up action, and adds clarity to everyday neighborhood concerns.

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CHAPTER 1 –INTRODUCTION

The citizen-first platform waj Uthao enables users to transform their daily civic issues into trackable actions. People face difficulties when trying to contact authorities because their reports disappear in WhatsApp groups and departments struggle to determine which issues need immediate attention. The combination of public dissatisfaction and institutional breakdown between citizens and their service providers occurs because of this situation.

The platform establishes a direct path for citizens to interact with the system through its contemporary operational system. Users can create reports through the platform by adding photos and their location and brief description. The system uses artificial intelligence to direct reports to appropriate departments and merges duplicate cases and shows complete status updates from submission to work progress and final resolution. Department staff members receive specific dashboards to handle case assignments and priority setting and completion tasks while administrators oversee operations and enforce rules and ensure equal treatment for all users.

The system provides a straightforward accountable process which shows task progress and delivers feedback after issue resolution to help communities track successful work and identify remaining problems. The system offers optional AI-based support which uses report IDs to track reports and shows nearby related cases and helps distribute work more effectively without requiring users to learn new complexities. Awaj Uthao enables communities to express themselves effectively through its clear system which assigns tasks and tracks progress and provides feedback after resolution to identify both successful work and ongoing issues.

CHAPTER 2 – PROPOSED SOLUTION

●Account verification: Users including citizens and department heads and staff members and admins Register through basic information entry while admins verify user roles to stop unauthorized access. The system enables only authenticated users to perform case assignments and case closures.

●Citizens can submit reports through the system by selecting a category and providing details and photos and exact location information. The system identifies nearby duplicate reports and enables users to merge their reports into existing cases to minimize duplicate entries.

●Smart routing: The system uses automated classification methods and department and jurisdiction rules with AI assistance to direct reports to their appropriate destinations. Admins maintain the ability to change routing paths when specific situations require different handling.

● The system maintains a detailed history of all modifications which show the progression from "submitted" to "in progress" until the case reaches "resolved." Staff members upload evidence through photos and notes and location check-ins which establishes an auditable record of all changes.

●The system enables citizens to submit complaints about dangerous situations or unaddressed issues or poor case management through evidence submission. The system identifies problematic cases for admin assessment while it triggers additional departmental responses for persistent system failures..

●The system maintains safety standards and protects user privacy and maintains system integrity through its access controls and verified user actions and rate limits and audit logs. The system restricts access to sensitive information based on user authorization levels.

●The system generates analytical maps through heatmaps that show time-based data and category-specific information and hotspot identification to assist administrators in resource allocation and problem area identification.

●The system enables citizens to provide feedback about their ongoing reports and their completed reports. The system analyzes all feedback entries through sentiment analysis which produces a sentiment score And label that appears on the admin dashboard for performance evaluation.

CHAPTER 3 –HARDWARE AND SOFTWARE REQUIREMENTS

HARDWAREREQUIREMENTS:

S.No	Name of the Hardware	Specification
1	Processor	Intel Core i5 or higher (or equivalent)
2	RAM	8GBorhigher(16GBrecommendedforsmoothwebandDB operations)
3	Storage	Minimum 256 GB SSD (500 GB recommended)
4	Network	Stable internet connection for using gemini

SOFTWAREREQUIREMENTS:

S.No	Name of the Software	Specification
1	Operating System	Windows10/11,
2	Programming Language	Python (FastAPi)
3	Frontend Framework	React.js + CSS (for UI and request handling)
4	Backend Framework	Python (FastAPI)
6	Database	SQLite (for storing reports,user,admin,departments data)
7	Development Tool	VisualStudioCode,Postman
8	Testing Tool	Postman

CHAPTER 4 –DATA FLOW DIAGRAM (DFD)

LEVEL 1 DFD:

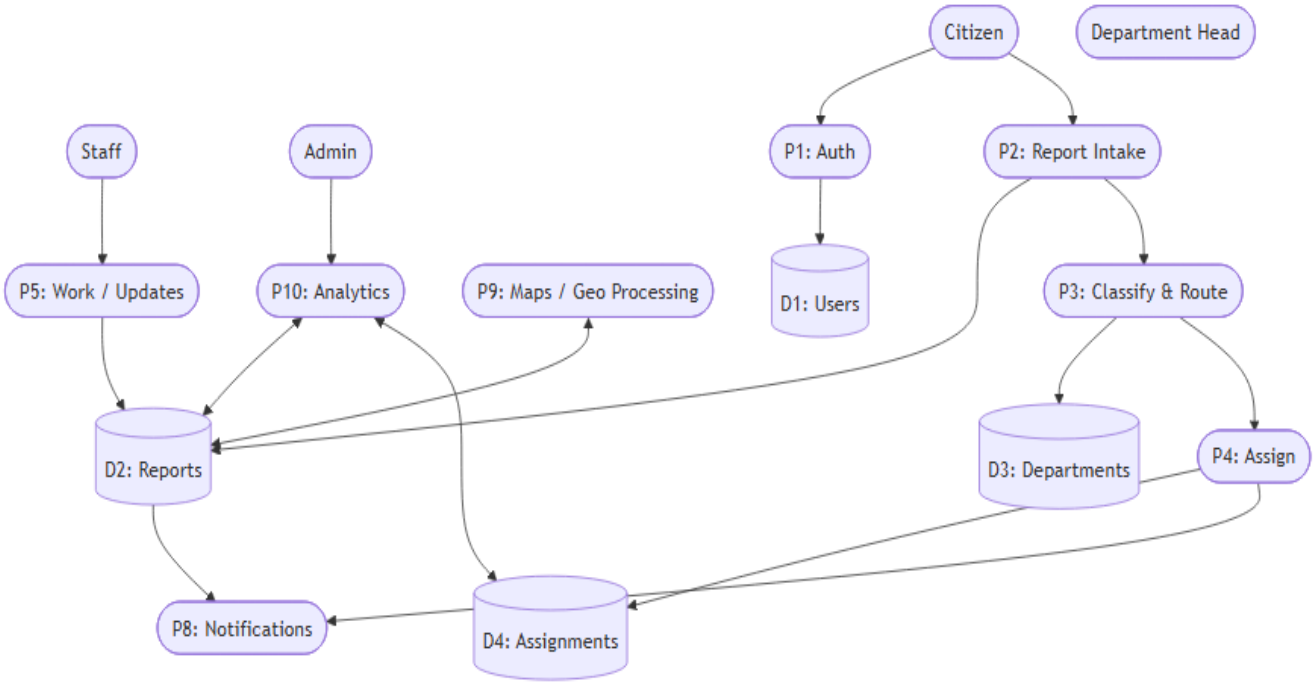

FIGURE 4.1

CHAPTER 5 –SCHEMA DESIGN DIAGRAM

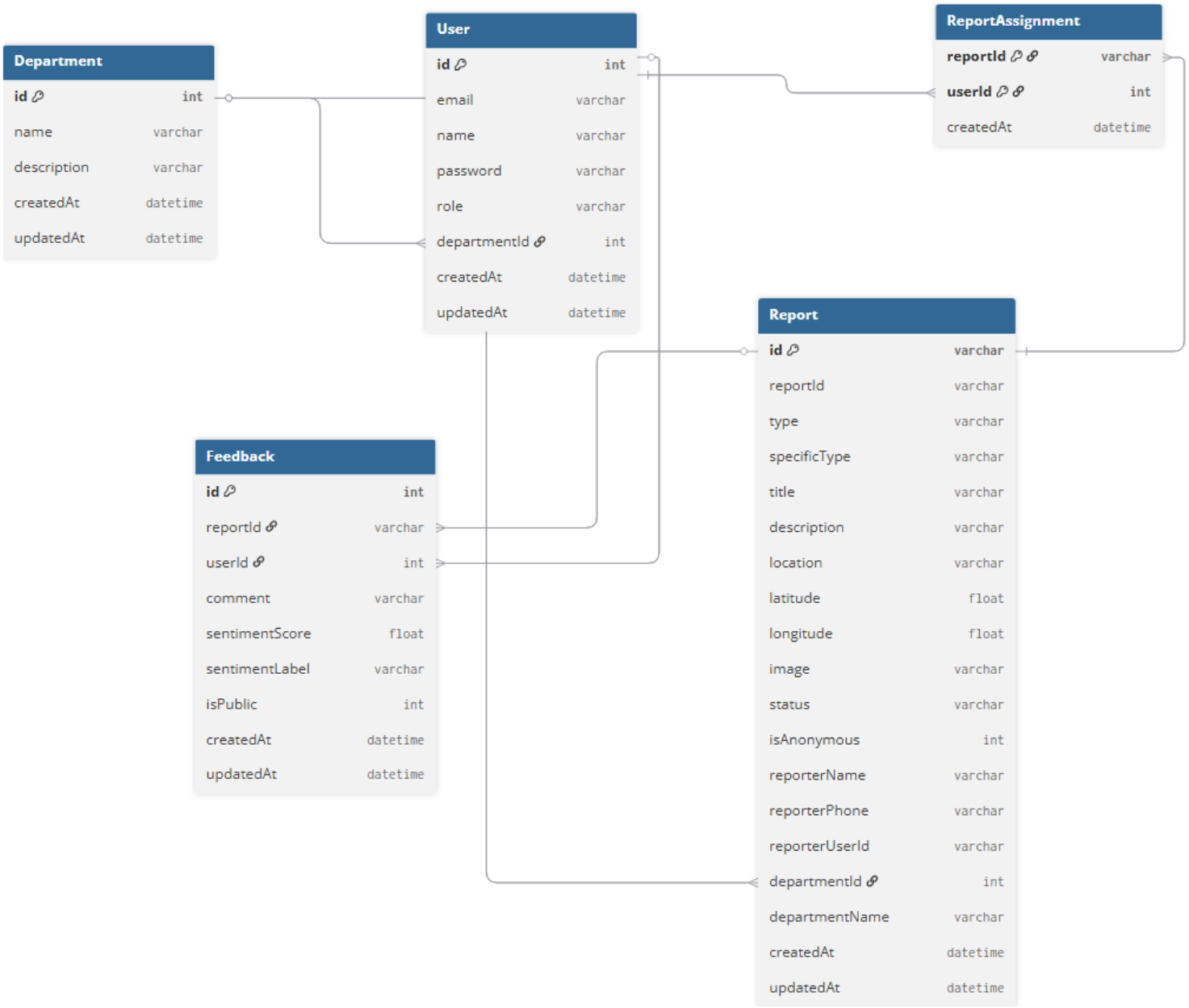

FIGURE 5.1

The **AWAJUTHAO** system operates through a SQLite database which handles citizen reports and departments and staff users and report assignments and public feedback. The database contains several essential tables which are described in the following section.

1 . departments

The system uses this table to store all Departments which handle citizen complaints. The system maintains department information through official names and brief descriptions and timestamped records of creation and modification dates. The following examples demonstrate how the system operates.

- The system includes Police and Traffic Police and Fire Department and Municipal Corporation and Cyber Crime Cell and Women & Child Safety Cell as its departments.
- The system uses auto-incrementing integers to generate unique identifiers for each department.

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2. users

- The platform requires users to register through staff accounts and admin accounts for platform access.
- The system stores user information through email addresses and names and password hashes which exist on the authentication server.
- The system uses role assignments to determine user access levels through ADMIN and USER and DEPARTMENT_HEAD and DEPARTMENT_STAFF permissions.
- The system enables staff members to link their accounts to particular departments through the departmentId field which specifies their department affiliation (e.g. Traffic Police staff).
- The system stores user metadata together with creation and update timestamps.
- The system generates automatic integer IDs for each user account.

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3. reports

- The system stores all citizen-reported incidents in this fundamental database table.
- The system stores each report with the following information.
- The system generates two identification numbers for reports: an internal primary key string and a public tracking ID which appears on the Track Report page and in the chatbot.
- The system classifies reports into two categories which include EMERGENCY and NON_EMERGENCY.
- The system stores two pieces of information for each report: a title and a brief description written by the user or AI system.
- The system requires users to specify the exact nature of their incident through the specificType field which includes categories like "Road Accident" and "Water Leakage" and "Fire Outbreak".
- The system stores three pieces of location information which include human-readable text and geographic coordinates for mapping purposes and hot spot analysis and optional image evidence.

- The system tracks report status through four stages which start with PENDING followed by IN_PROGRESS and then RESOLVED and finally DISMISSED.
- The system allows citizens to choose whether they want to remain anonymous during the reporting process.
- The system allows users to provide additional information through reporterName and reporterEmail and reporterPhone fields.
- The system links each report to a User record through reporterUserId when the reporter has an active account.

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4. report_assignments

- The system enables staff users to select which reports they will work on.
- The system maintains three pieces of information for each assignment:
- The system stores reportId which references the internal Report.id and userId which references User.id and createdAt timestamp.
- A single report can have multiple users assigned to it while users can handle multiple reports.
- The system allows users to view report assignments through two different interfaces.
- The system allows department heads to view report assignments and staff members to access their assigned reports through their dashboards**.**

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5 .feedback

- The system maintains feedback data which users submit regarding reports following their completion of actions.
- Each feedback entry includes three essential pieces of information.
- The system tracks reportId to connect feedback entries with their corresponding incidents.
- The system tracks user IDs through userId to determine whether the feedback author belongs to staff or citizen status.
- The system allows users to enter any text they want through the comment field.
- The system uses AI-based sentiment analysis to generate sentimentScore and sentimentLabel values which include POSITIVE, NEGATIVE and NEUTRAL labels.
- The system allows users to decide whether their feedback should appear publicly or remain accessible only to staff members.
- The system tracks both creation and update times for each entry through its timestamp system.

CHAPTER 6 –TECH STACK

1) Next.js (React + TypeScript) – Frontend Web Interface

AWAZUTHAOuses **Next.js with React and TypeScript** for the frontend. React's component-based design makes it easy to build reusable pieces like the chatbot, map, report forms, and admin dashboards. Next.js adds:

- **App Router & layouts** – clean page structure for public map, contact page, admin dashboard, track-report page, etc.
- **Server-side rendering (SSR)** – faster first load and better SEO for public-facing pages like the hotspot map.
- **TypeScript support** – type safety across components and API calls, which reduces runtime bugs when handling sensitive data like incident reports.

This combination lets the UI feel fast and "app-like" while still being a standard web app accessible from any browser.

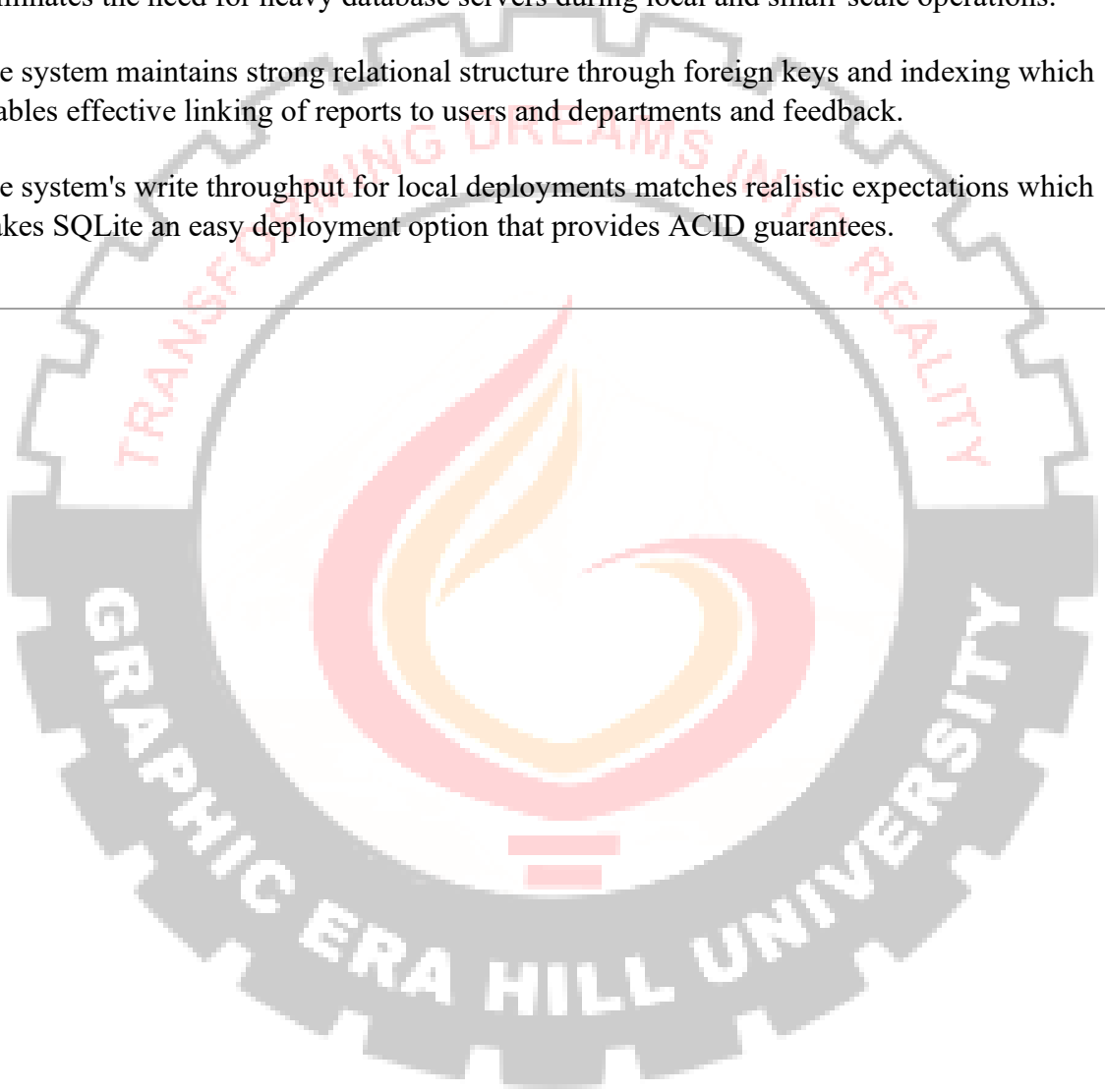
Next.js + React + TypeScript gives AWAZUTHAO a **modern, responsive UI** with a maintainable codebase and good developer experience.

2) FastAPI (Python) – Backend API

- The backend of the application runs on FastAPI which uses Python as its programming language. AWAZUTHAO requires the following functionality:
- The system needs to provide REST APIs which enable users to access reports and departments and submit feedback and track activities. The Awaz Assistant requires LLM provider integration through Gemini for its functionality. The system requires data processing capabilities to execute sentiment analysis and vector search operations.
- FastAPI matches our requirements because it offers:
- The system benefits from FastAPI because it operates at high speeds while supporting asynchronous operations which makes it suitable for handling multiple concurrent chat and map requests.
- The framework provides built-in support for Pydantic which enables developers to define request and response models with strong type definitions and validation capabilities.

3) SQLite (Better-SQLite3) – Core Transactional Database

- The application uses SQLite through better-sqlite3 on Next.js for structured data users to access departments and reports and assignments and feedback through the shared crime_lens.db file.
- The system benefits from SQLite because it provides lightweight embedded functionality that eliminates the need for heavy database servers during local and small-scale operations.
- The system maintains strong relational structure through foreign keys and indexing which enables effective linking of reports to users and departments and feedback.
- The system's write throughput for local deployments matches realistic expectations which makes SQLite an easy deployment option that provides ACID guarantees.



CHAPTER 7 – TESTING STRATEGY

1) Unit Testing

We began by testing each component separately before integration:

1)Backend + Database

- The system generates reports when users enter correct information but it refuses to process reports with missing or incorrect data. The system tracks report status through four stages which start at PENDING and progress to IN_PROGRESS before reaching RESOLVED and ending at DISMISSED. The system enables users to view reports through type or department or reporter or status filters. Users can generate new feedback entries which become accessible through report-specific retrieval functions.
- Sentiment Analysis
- The apisentiment endpoint received three different input sets which included positive and negative and neutral content. The system produces correct labels for all input combinations. The system uses NEUTRAL as its default output when any process fails.
- The initial tests revealed multiple system errors which we fixed before performing a complete system integration..

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2) Integration Testing

- The system underwent complete end-to-end functionality testing during this stage.
- **Frontend ↔ Backend**
- The system operated as citizens and staff members would in real life during testing.
- The system processed reports through database storage before showing them to admin and staff users.
- The system processed feedback entries by updating both Feedback table entries and sentiment analysis results.
- The system processed two different user input scenarios.
- The system produced responses which were both relevant to the context and easy to understand.

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3) Manual UI Testing

- The platform required interface testing because it serves regular citizens.
- **Citizen Perspective**
- The system allowed users to view maps and hotspots and local issues.
- Users could file reports through the system using both anonymous and non-anonymous options.
- Users could monitor their reports through the system while understanding the current status.
- Users could access feedback from the public comments about resolved issues.
- **Staff/Admin Perspective**
- Staff members accessed their assigned reports after successful login.
- The system enabled users to search reports based on department or category or current status.
- The system allowed staff members to update report status which immediately reflected on the citizen interface.
- Staff members used the system to view feedback along with sentiment score results.

CHAPTER 8 – SNAPSHOTS OF PROJECTS

FIGURE 8.1: HOME PAGE

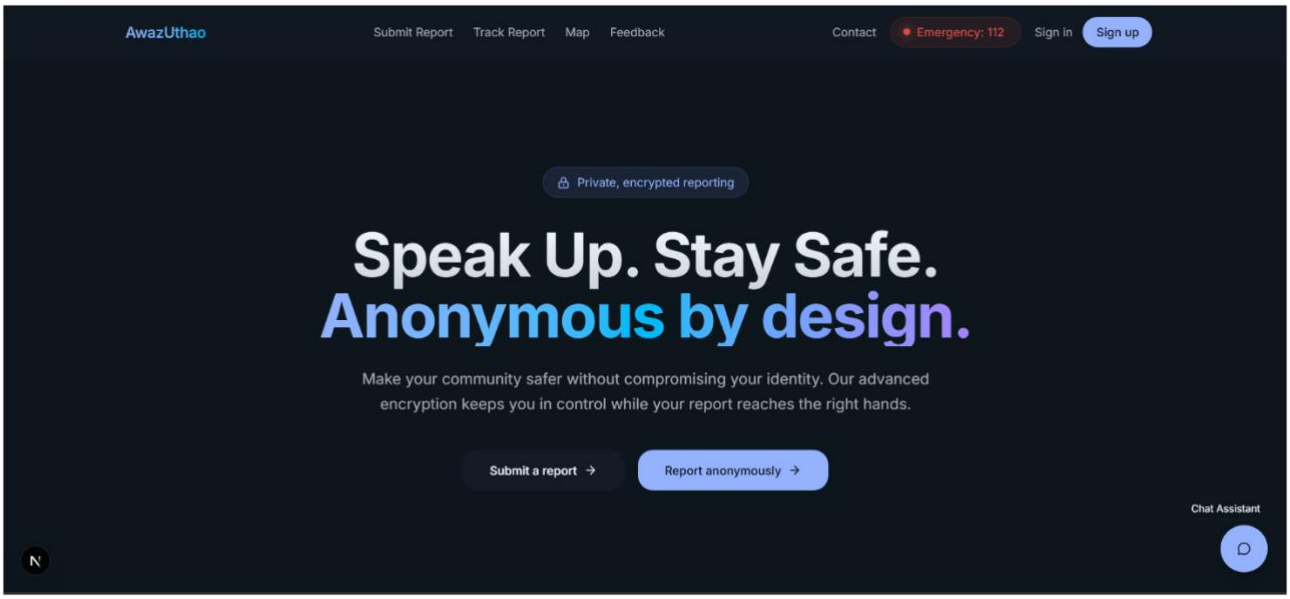


FIGURE 8.2: SUMBIT REPORT PAGE

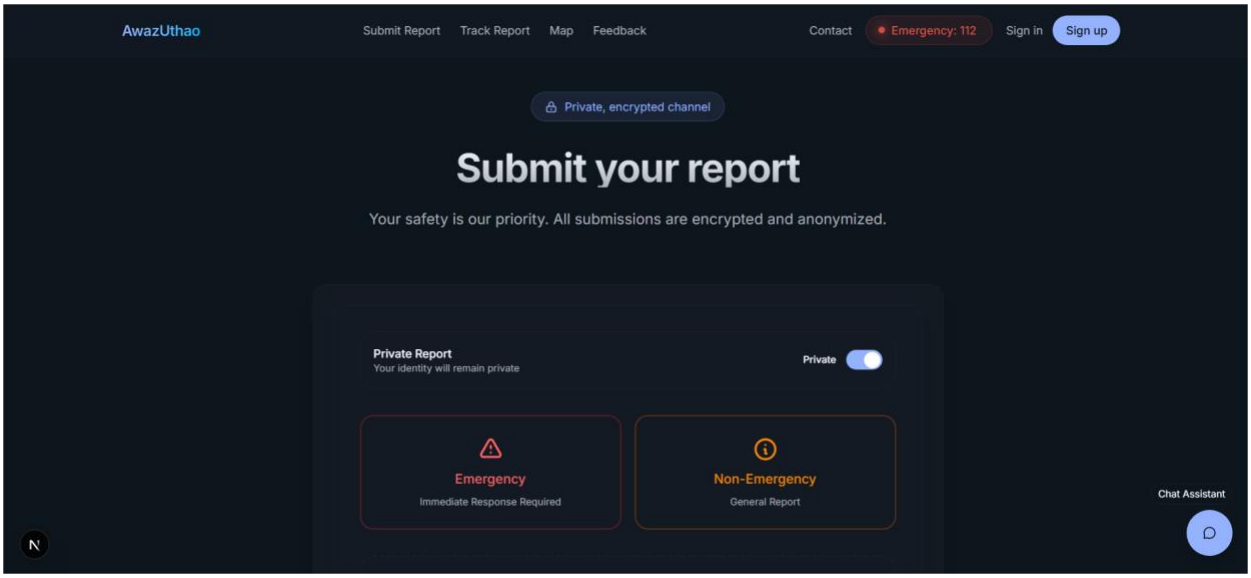


FIGURE 8.3: TRACK REPORT

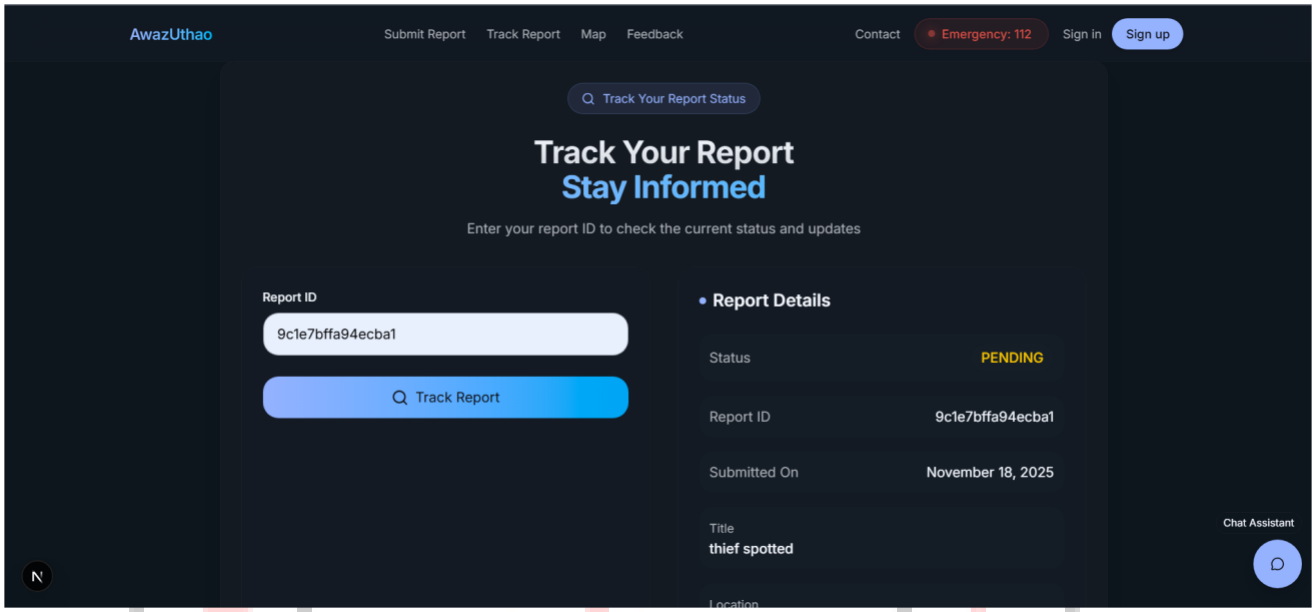


FIGURE 8.4: CRIME MAP

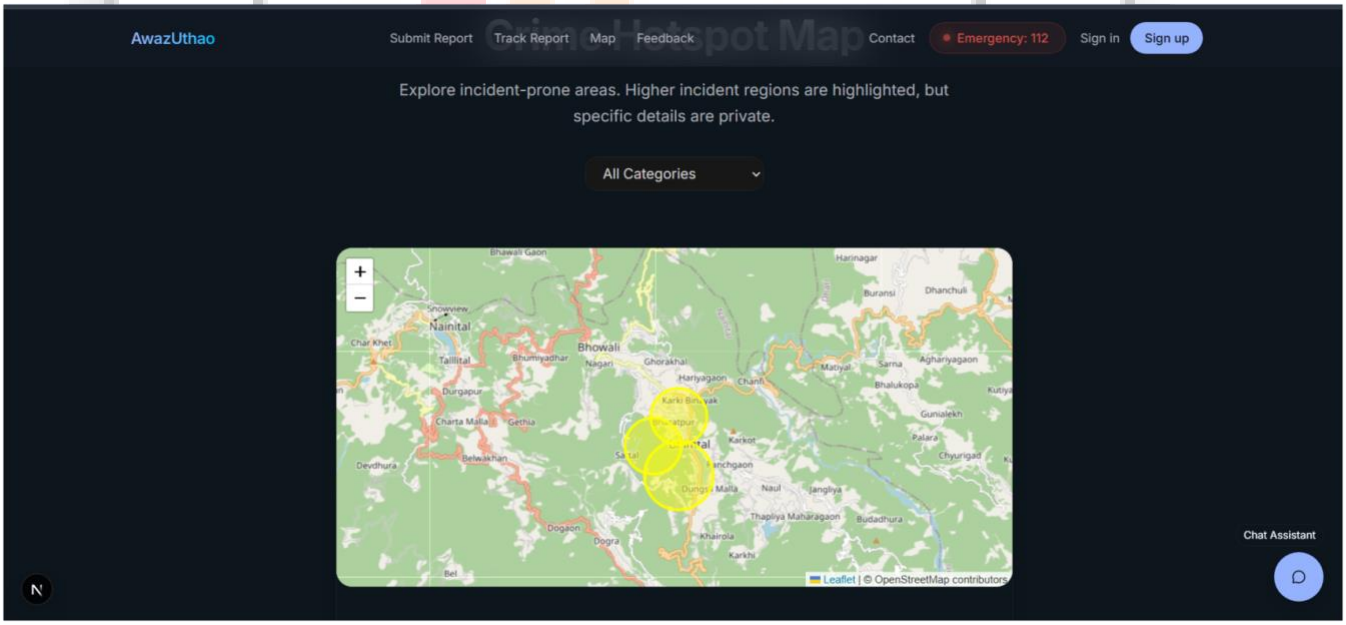


FIGURE 8.5: FEEDBACK PAGE

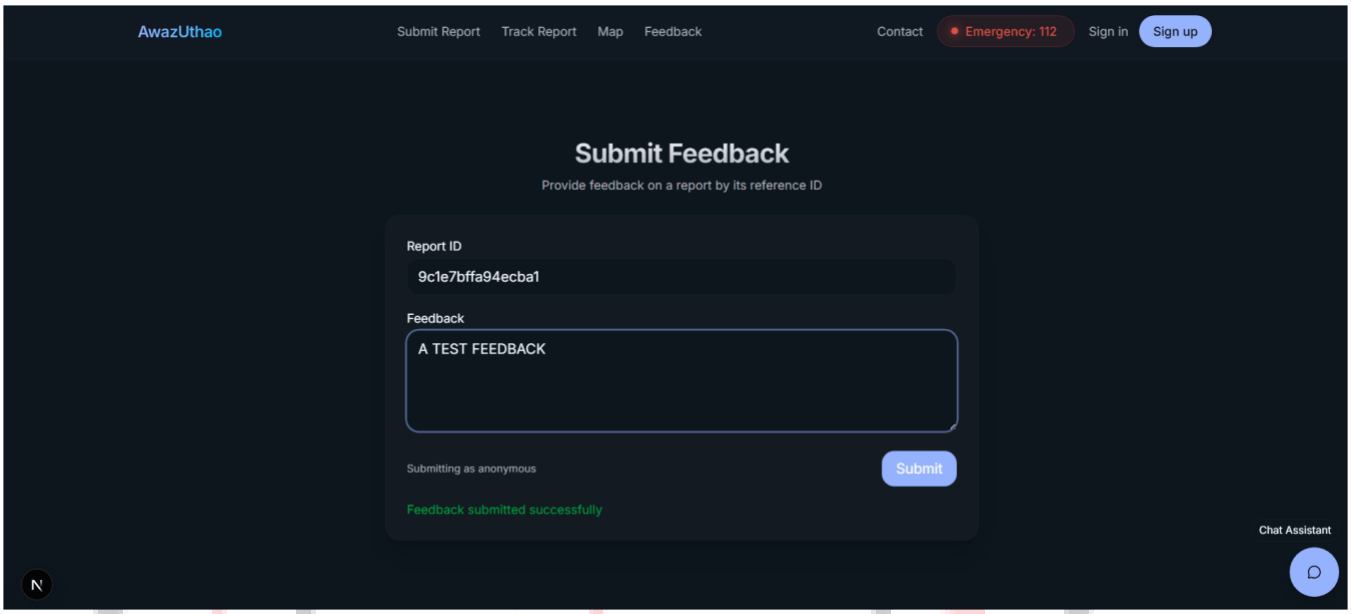


FIGURE 8.6: ADMIN PAGE

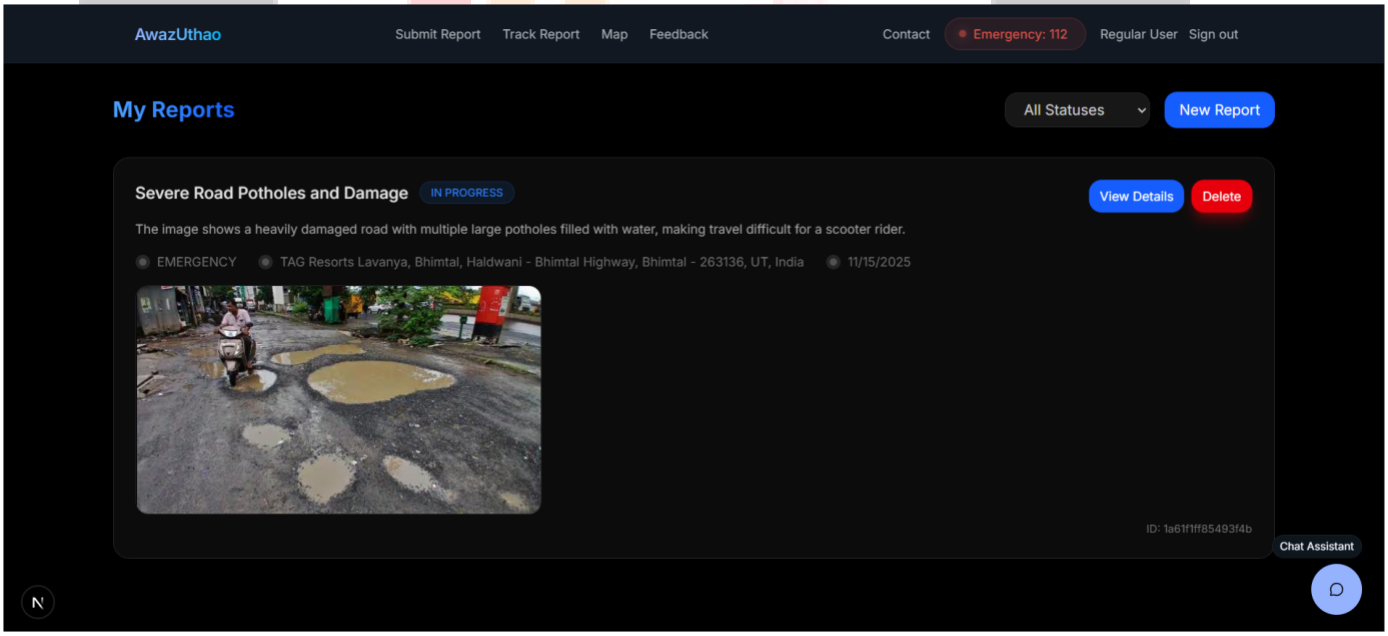
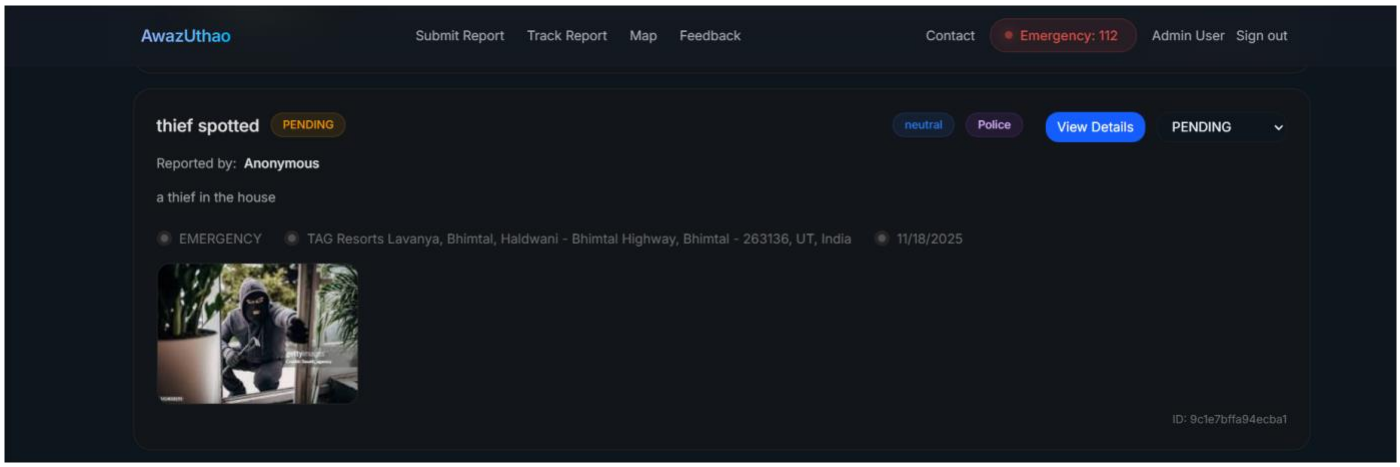


FIGURE 8.7: USER PAGE



CHAPTER 9 – ENHANCEMENT

1. **Report with fully offline :**integrate such that website is still able to take reports while fully being offline
2. **AI-Based Prediction:** Use machine learning to predict the hotspot region based on the data
3. **Live Case Tracking for Users:** Providing users to see the flow of the report . whom assigned how it going with contact and feedback from the officer assigned..
4. **Multi language :**Enable website to switch between language of users .
5. **Voice Assistant :** allowing to file report with help of voice assistant and basic query regarding it

CHAPTER 10 – CONCLUSION

AwazUthao is an initiative that fills the gap between the citizens and government with respect to providing a digital based user-friendly platform where citizens are able to register their complaints digitally as well as track the status of those complaints. It is easy for citizens to make their voices heard and there is much more structure and transparency with respect to how grievances are handled and who is accountable for handling those grievances. The ability to register securely, follow the status of complaints, and have administrative access and officer access roles has made **AwazUthao** a solid base for a modern reporting platform for citizens.

These additional capabilities enhance the vision for **AwazUthao** by making it smarter, safer and more accessible to all citizens. Advanced complaint analysis using data analytics, Verification through secure means, offline complaint support, and live tracking of cases increases trust and access for users, particularly in situations of low connectivity or sensitivity.

A multiple role admin dashboard enables super admins, verifiers, and complaint officers to operate within defined limits and efficiently complete their respective tasks. These combined enhancements establish **AwazUthao**as a scalable, real world ready platform that supports effective governance and enhances public safety..

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