

## Project 4 Documentation – StreetWatch

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### **Problem Identification:**

Safety and security in neighborhoods have increasingly become an issue of importance in today's world. Crimes, suspicious activities, and the need for vigilance in the community are major issues that residents face. The Neighborhood Safety Platform tries to alleviate such problems by providing a convenient interface for community members to report incidents, access safety updates in real time, and see an interactive map with reported suspicious activity. This platform enables the participation of residents in safety matters pertaining to their neighborhood, consequently engendering a sense of community and cooperation.

I was highly inspired by the current Citizen app and its functioning in solving the real-time problem of safety in every locality. Inspired from this, I got the idea to make something campus-specific, which led me to select this topic to take a stab at building a prototype for a neighborhood safety app.

### **User Interface Solution**

The proposed user interface (UI) for the Neighbourhood Safety Platform includes several key features designed to enhance community safety:

- **Safety Overview Tile:** Displays the current safety status of the neighbourhood, indicating whether it is "Safe" or requires "Caution." This tile will use large icons and bold text for easy readability.
- **Urgent Alert Tile:** Shows details of the most recent incidents reported in the area. When there are no alerts, it will indicate that the area is safe while encouraging vigilance.
- **Interactive Map Tile:** Provides a dynamic map powered by Leaflet.js, displaying markers for reported incidents. Users can click on markers to view additional details about each incident, such as type, location, time, and description. This feature allows residents to visualize safety concerns in their area.
- **Incident History Tile:** Lists previously reported incidents in a scrollable format, allowing users to stay informed about past events.
- **Report Incident Tile:** Enables users to report new incidents through a simple form. Upon submission, the incident is added to the history and displayed on the map.
- **Panic Button:** A dedicated button that alerts nearby users about emergencies in real-time.

This UI not only informs residents but also encourages them to engage with their community actively.

### **Interview Inputs:**

Looking at the UI features which could solve a problem, I conducted interviews to get user inputs based on what they think on the problem/ features and get any inputs.

User 1: Prem Patel

Q1: How important do you think real-time incident reporting is for neighbourhood safety?

A1: "It is very important, especially in these times when campus safety is not the best in student's localities.

Q2: What features would you consider essential in a neighbourhood safety app?

A2: "I'd say an interactive map showing recent incidents, the ability to report activities easily, and some form of alert system for urgent situations.

Q3: Do you think a panic button feature would be useful in a community safety app?

A3: "Absolutely. In emergency situations, every second counts. A panic button that quickly alerts nearby residents and the authorities and provide them with your location could potentially save lives.

User 2: Max Buckley

Q1: How do you currently stay informed about safety issues in your neighborhood?

A1: "It's challenging. We have a neighborhood watch group on social media, but information is often delayed or unreliable. A dedicated platform for this would be really helpful."

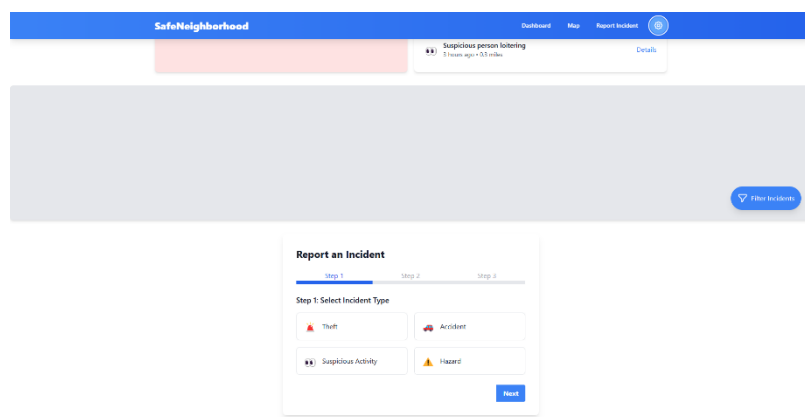
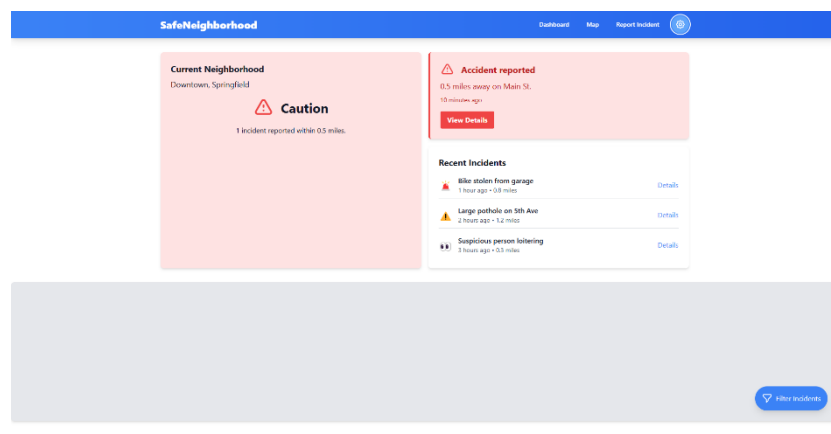
Q2: Would you use an app that allows you to report and view safety incidents in your area?

A2: "Definitely. It would give me peace of mind to know what's happening around me and to be able to contribute to keeping my neighbours informed."

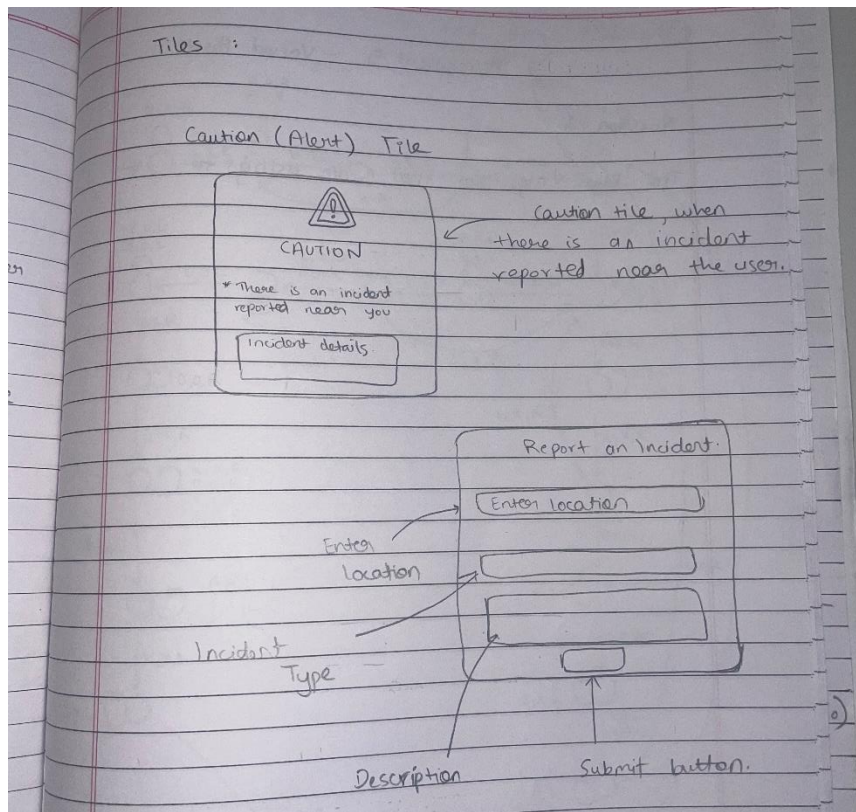
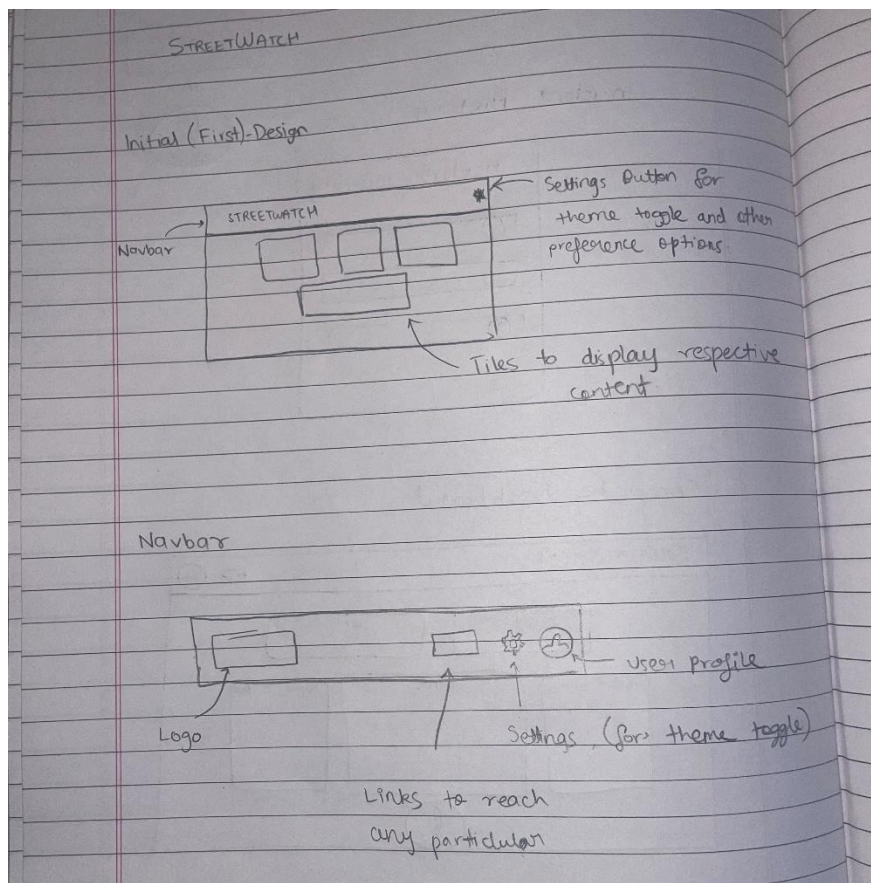
Q3: What concerns might you have about using such an app?

A3: "I'd be worried about privacy and the potential for false reports. The app would need to have some way to verify information and protect users' personal data."

In the initial stages of development, my approach to the Neighborhood Safety Platform was primarily feature-driven, resulting in a UI that, while usable and comprehensive, lacked in user-friendliness and aesthetic appeal. The original interface, as shown in Figure shown below, was cluttered with information and did not prioritize user experience or intuitive navigation. However, as the project progressed, I recognized the critical importance of design elements, thematic consistency, and efficient layout in creating a truly effective and engaging platform. This realization prompted a complete redesign, starting from scratch to develop the current UI, as depicted in design sketches attached below. The new design emphasizes clarity, ease of use, and visual appeal, incorporating a clean layout, consistent color scheme, and intuitive tile-based organization. This pivot in approach demonstrates the valuable lessons learned about the significance of user-centered design and the impact of thoughtful UI/UX principles in creating a more accessible and effective tool for community safety. The redesign process not only improved the platform's aesthetics but also enhanced its functionality, making it more likely to be adopted and regularly used by community

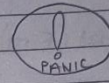


As mentioned, this UI did not seem intuitive to me and was not focusing on the theme, colour contrast, etc. I went through the design process once again and came up with the following designs:



! PANIC

OR



Incident History

Incident History	
①	
②	
③	

Complete Dashboard

STREETWATCH

Safety Status

Alarms

Incident History

MAP

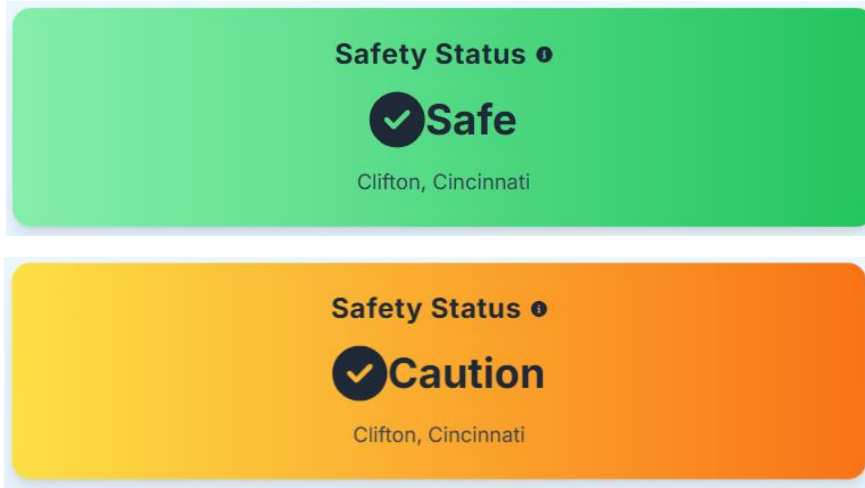
Report Incident

## Documentation of UI Functionality

### How the UI Works

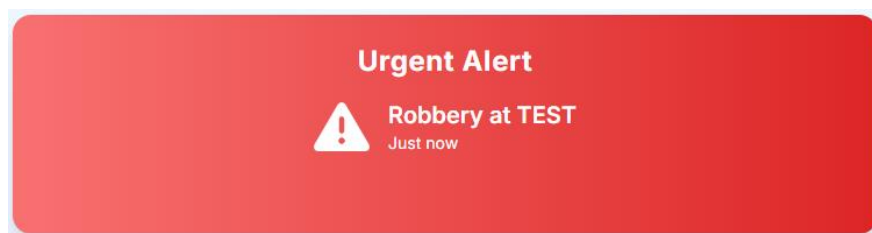
#### 1. Safety Overview Tile:

- Displays current safety status.
- Changes icon based on status ("Safe" or "Caution").
- Updates dynamically based on user reports.



#### 2. Urgent Alert Tile:

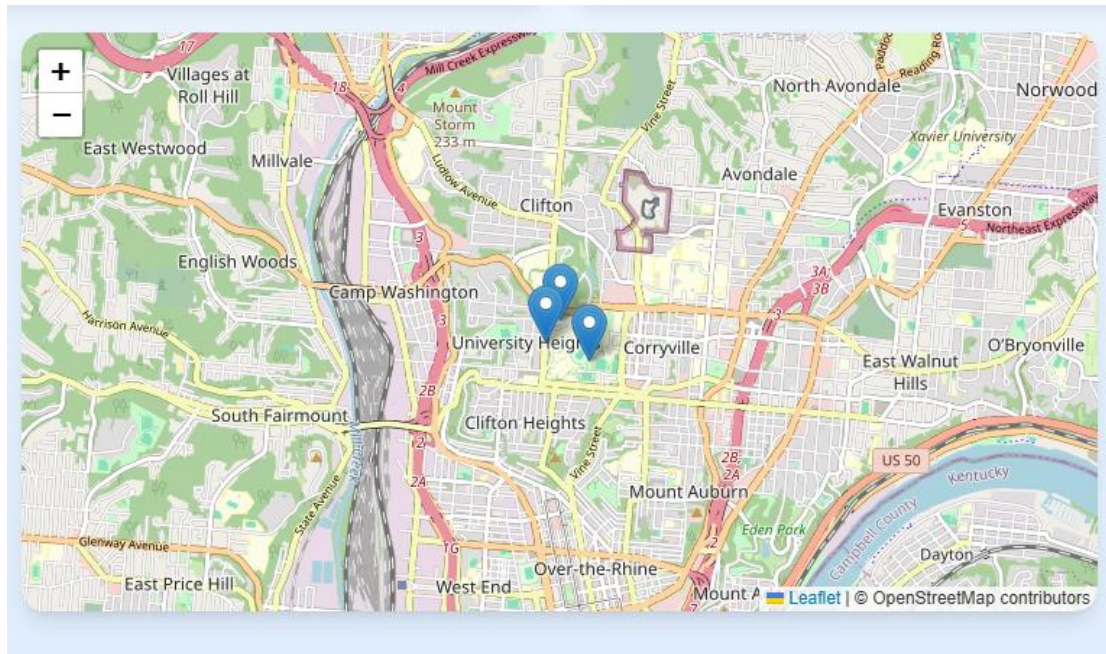
- Shows recent alerts or indicates that there are no urgent alerts.
- Changes color based on alert status (green for safe, red for urgent).



#### 3. Interactive Map Tile:

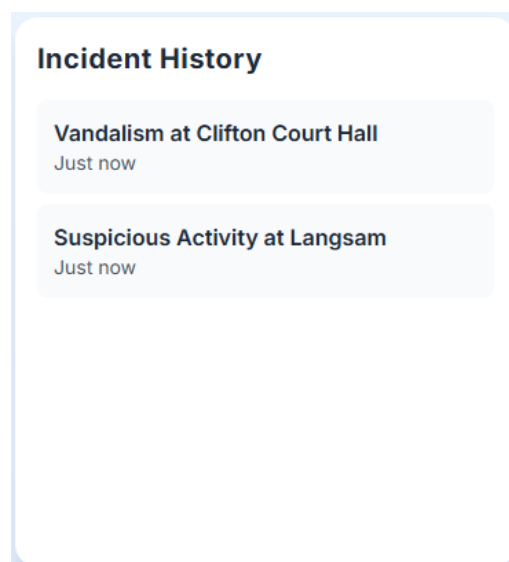
- Displays an interactive map centred on Clifton.
- Uses Leaflet.js for rendering.
- Markers represent reported incidents; clicking a marker shows incident details.





#### 4. Incident History Tile:

- Lists all reported incidents in a scrollable format.
- Each incident is displayed in a card-style layout with relevant details.




#### 5. Report Incident Tile:

- Allows users to input details about new incidents.
- Submitting an incident updates both the history list and the map markers.

## 6. Panic Button:

- Alerts nearby users when pressed.
- Provides immediate notification functionality.

### Report Incident

 Enter location

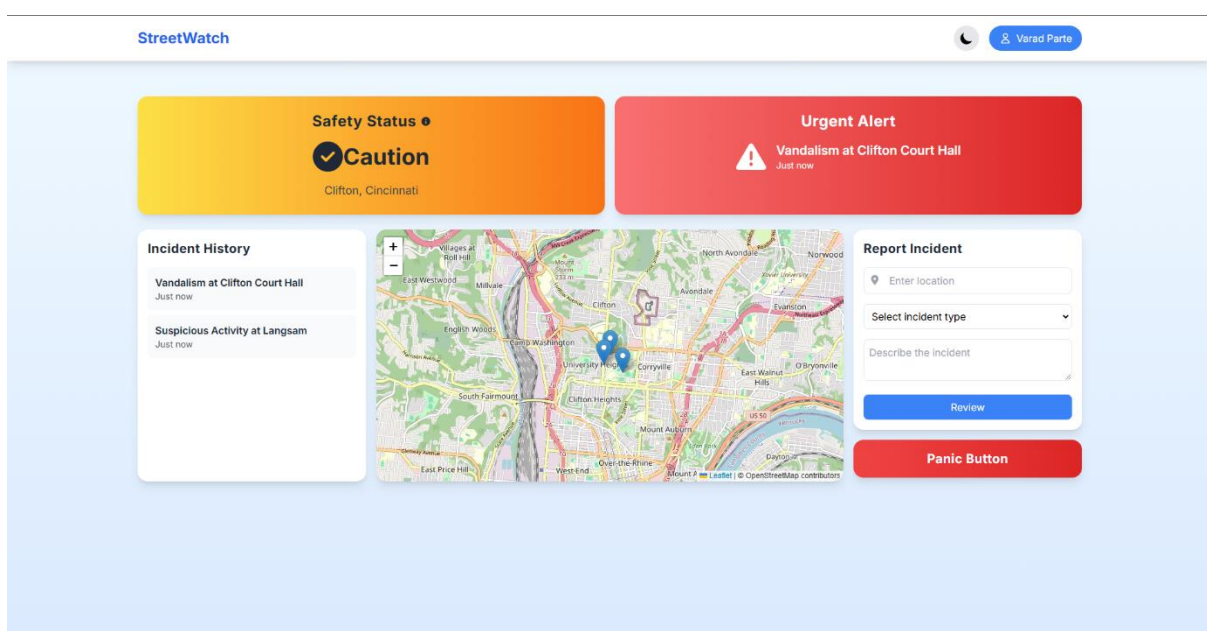
Select incident type ▼

Describe the incident

Review

Panic Button

Here is the whole UI:





## **Code Implementation:**

The Neighbourhood Safety Platform was implemented using a modern web development stack, leveraging the power of Svelte for its reactive UI components and Tailwind CSS for efficient, utility-first styling. The interactive map feature was integrated using Leaflet.js, an open-source JavaScript library for mobile-friendly interactive maps. OpenStreetMap was utilized as the tile layer provider, offering detailed and freely available map data. For icons and visual elements, the project incorporated Font Awesome through the @fortawesome/svelte-fontawesome package, ensuring a consistent and professional look across the interface. State management was handled natively through Svelte's reactive declarations and stores, while transitions and animations were implemented using Svelte's built-in transition functions. The project structure followed Svelte's component-based architecture, promoting modularity and reusability of code. There was also AI used to solve a few bugs which were encountered throughout development. AI was also used in deciding which library and icon pack that should be used for best results.

## **Future Work:**

Each tile in the current UI presents opportunities for enhancement to increase the platform's effectiveness and usability. The Safety Status tile could be expanded to include more granular safety levels and historical trend data, providing users with a more comprehensive overview of neighborhood safety over time. The Urgent Alert tile could be improved with real-time push notifications and the ability to filter alerts by type or severity. The Interactive Map tile could be enhanced with clustering for dense areas of incidents, custom map styles, and the integration of official crime data from local law enforcement APIs. The Incident History tile could benefit from advanced filtering and sorting options, as well as the ability to generate reports or visualizations based on historical data. The Report Incident feature could be augmented with image upload capabilities, geolocation tagging, and integration with local emergency services for critical incidents. Finally, the Panic Button functionality could be expanded to include direct connections to emergency contacts or local authorities, with options for silent alerts in sensitive situations. These enhancements would significantly improve the platform's utility and impact on community safety.

## **Demo Video:**

[https://drive.google.com/file/d/1eK7l3tDGpOgjCy\\_sEYKgMs\\_wATFyTQ-/view?usp=sharing](https://drive.google.com/file/d/1eK7l3tDGpOgjCy_sEYKgMs_wATFyTQ-/view?usp=sharing)

## **Github Link:**

<https://github.com/vrparte/StreetWatch.git>

## **Conclusion**

The Neighborhood Safety Platform serves as a vital tool for enhancing community safety by leveraging technology to foster communication and vigilance among residents. This is just a prototype developed, although by integrating real-time reporting features with an interactive map, this platform empowers individuals to take proactive steps in ensuring their neighborhood's safety. As we move towards production, the seamless integration of real-time incident reporting will further enhance its effectiveness as a community resource.