Emergency Alert System

MiniProject

Design Presentation

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Overview

Introduction

Our project is developing an emergency alert application that uses technology to quickly notify nearby users and their emergency contacts in real-time during an emergency. Our system sends notifications with location information and other relevant details using a panic button, making it easier for people to get the help they need when they need it most.

Study of Existing Systems (Literature Survey)

Georeach Emergency App [1]

- near real-time location tracking
- SOS/panic button and covert gesture for activating it without opening the application
- end-to-end encrypted chat
- SMS and email notifications

Study of Existing Systems (Literature Survey)

VithU [2]

- Personal safety and SOS communication mobile app
- enables users to assign emergency contacts and send them SOS messages along with realtime location
- An initiative by Channel V India and Star TV
- Set up a list of emergency contacts then press the power button twice in quick succession and send messages every 2 minutes with location

Study of Existing Systems (Literature Survey)

bSafe [3]

- The app allows women to create a personal safety network of 'guardians' consisting of friends, family, colleagues, partners, etc.
- There are features like voice alarm activation, live streaming, and automatic audio and video recording.
- Guardians in the safety network can track the user's movement in real time.
- users can activate the SOS button with a voice command even when the phone is not in their hands.
- User can also avail the 'Fake Call' feature to make her phone ring, and get out of unpleasant situations.

Gap Analysis

Georeach Emergency App

- **Dependence on Mobile Network:** Georeach app relies on mobile network coverage to function
- **Reliance on Users:**
  - The effectiveness may depend on the number of users in a given area.
  - In areas with fewer users, the app may not be as effective in providing emergency alerts

Gap Analysis

VithU

- **Network Dependency:** The app requires an active internet connection to function, which can be a limitation in areas with poor or no network coverage.
- **Limited Contact List:** The app allows users to add only two emergency contacts, which may not be sufficient in certain situations.
- **False Alarms:** The app can trigger false alarms if the phone is accidentally triggered or if the user forgets to turn off the app after an emergency situation has been resolved.
- **Lack of Security:** The app does not provide any additional security features to protect the user's personal information or prevent unauthorized access.

Gap Analysis

bSafe

- **Dependence on Mobile Network:** It relies on mobile network coverage to function, which can be a limitation in areas with weak signal coverage.
- **False Alarms:** Like any emergency alert system, the Bsafe app may trigger false alarms, which can lead to unnecessary stress and panic.
- **Subscription Model:** The Bsafe app requires a subscription to access all of its features.
- **Technical Issues:** Some users have reported technical issues with the Bsafe app, including problems with the GPS location tracking

Proposed System

Emergency alert application developed for android operating system to send emergency alerts to nearby users, authorities and emergency contacts, along with real-time location and relevant medical information with an easy to access and reliable alert button.

Requirement Collection Process

- Through literature Survey
  - Studied similar systems.
  - Read Research papers.
- From user observation
  - Studied emergency situations from user's perspective

Functional Requirements

- User Registration and Login
  - User authentication should be required to ensure that only registered users can send emergency notifications.
- Panic button
  - Easily accessible and reliable panic button
- Location-Based Notifications
  - The app should use the user's current location to send notifications to nearby users in the event of an emergency.
- Emergency contacts
  - Integrate emergency contact information, such as phone number to receive notifications in the event of an emergency.

Functional Requirements

- Push notifications
  - The app should use push notifications to notify users of emergency situations even when the app is not open.
- User Profile
  - user profile includes emergency contact information, medical information, location.
- Map Integration
  - Google Map integration to view current location of the person in emergency
- False alarm detection
  - Report false alarms and prevent the sending of notifications that may cause panic and unnecessary emergency responses.

Non-functional Requirements

Performance Requirements

- Fast response time when sending and receiving notifications
- Optimized to minimize battery usage on the device
- Intuitive and user-friendly interface
- Send notifications even if there is a weak network signal
- Handle a large number of users and notifications without compromising performance.

Security Requirements

- Strong user authentication mechanism to ensure that only authorized users can access the system and send emergency notifications.
- Encryption technologies to protect user data and sensitive information during transmission and storage.
- Rate limiting mechanisms to restrict the number of requests that can be made from a single IP address in a given period of time.

Reference

- Ian Sommerville, Software Engineering, Pearson Education, Tenth edition, 2015.
-  **GeoReach Article:** https://hypersense-software.com/projects/georeach-emergency-app

   **VithU Article:** https://www.novelwebcreation.com/blog/for-women-safety-v-channel-launched-vithu-mobile-app

   **BSafe Documentation:** http://ijcem.in/wp-content/uploads/2014/10/BSafe-BSecure.pdf

THANK YOU