



Empowered Safety: SOS App

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INTRODUCTION

Women's safety in the modern digital era remains a critical concern, particularly in regions where access to real-time emergency services is limited. The proposed system introduces an intelligent, multi-layered approach to personal protection. Alongside voice-activated SOS commands that enable hands-free distress signaling, the app automatically sends emergency alerts and location details to predefined contacts. A standout feature integrates photoplethysmogram (PPG)-based heart rate and blood pressure monitoring using a smartphone's flashlight and camera. Together, these features create a proactive, data-driven safety solution that bridges physical health sensing and rapid emergency response.

Literature Review

1. Existing Mobile Safety Applications (e.g. MySafetipin, 112 India, Raksha App)

→ Provide SOS alerts through shake gestures.

Limitation: Still require manual user action and fail in unconscious or high-stress situations.

2. Emergency Communication Services (SMS-based Alerts, GPS Sharing via WhatsApp/Google Maps)

→ Enable location-based help requests.

Limitation: Depend on internet or stable network, no automation, and no simultaneous contact broadcasting.

3. Health Monitoring and PPG-based Detection Research

→ Studies show that optical sensors (phone camera + flashlight) can measure heart rate trends.

Limitation: Used mainly for fitness tracking, not connected to emergency prediction or alert systems.

3 Major Setbacks

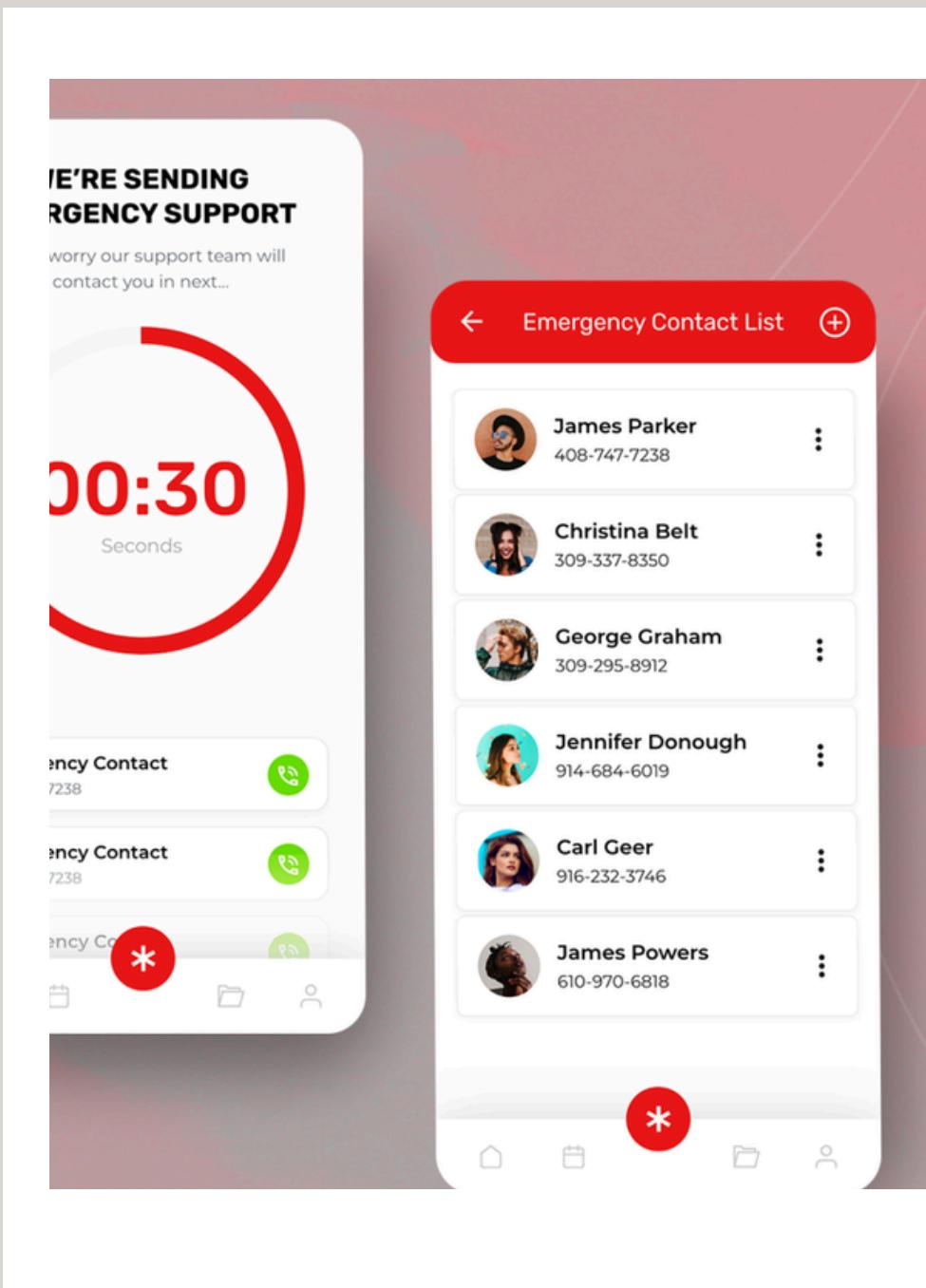
Problem Statement

The three key issues that define the project and are therefore critical points of development are as follows:

- **Existing safety solutions rely on manual triggers**
- **Emergency alerts often fail due to Lack of Reliable Location Sharing**
- **No Integration of Health Signals to Detect Silent Emergencies**



Objective



Gesture Recognition

. Using voice extends this capability, as activation of the SOS alert can be done in a discreet and hands-free manner.

Real-Time Tracking

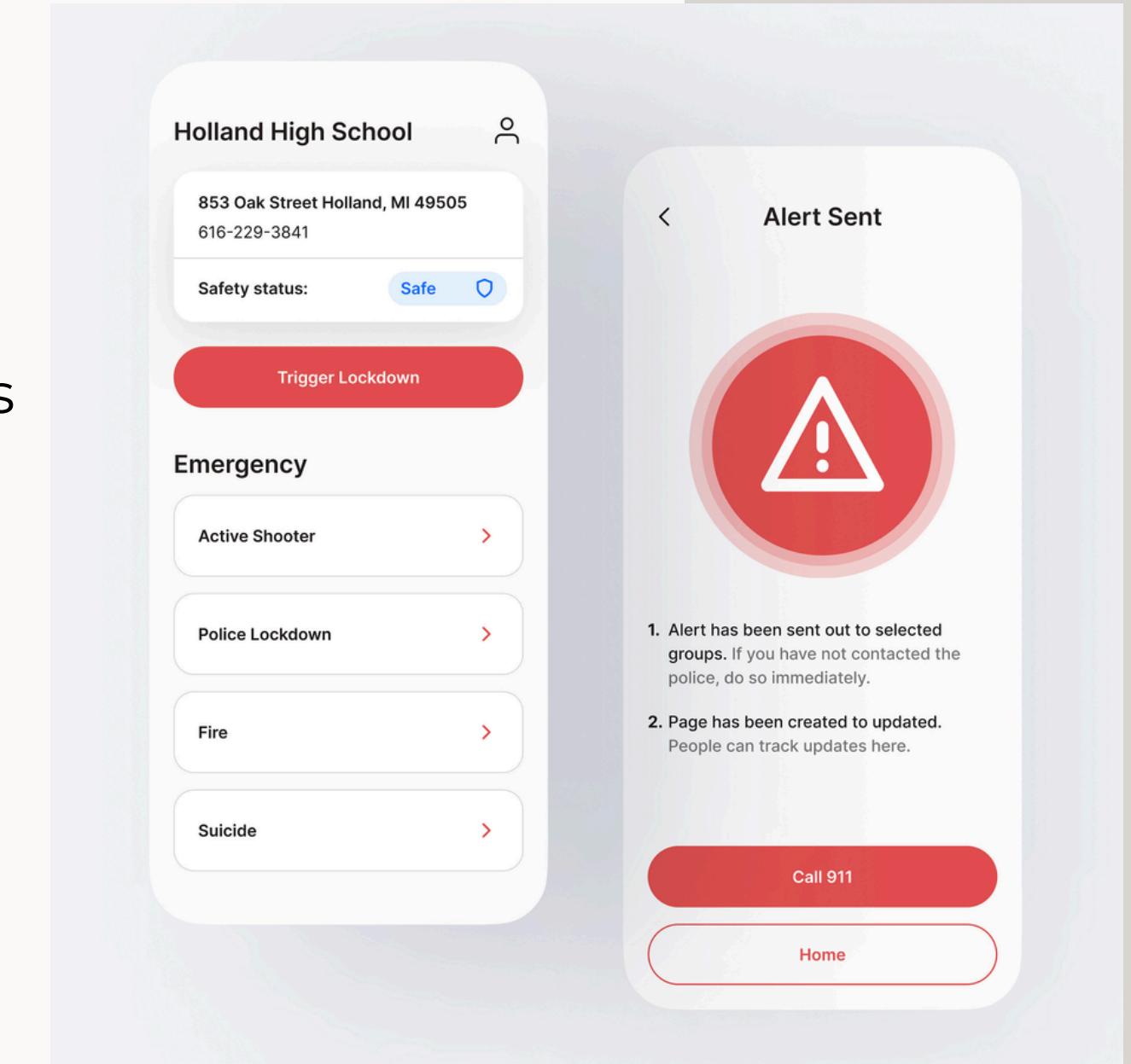
The app features real-time location tracking that is activated at the moment an SOS is triggered. Live tracking allows responders to locate the user in real-time, reducing response time .

Emergency Contact Alerts

The application allows for a strong system that will send well-timed and accurate alerts to pre-configured emergency contacts when an SOS is raised.

Methodology

1. Requirement Analysis →
 - User Interviews and Surveys
 - Market Analysis
2. Prototype Design →
 - User Interface
 - System Architecture
3. Feature Implementation →
 - Voice Recognition Systems
 - SOS and Live Tracking Functionalities
 - SMS System
 - Health Monitoring
4. Testing and Iteration →
 - Simulated Testing
 - Feedback Loop
5. Deployment and Refinement →
 - Pilot Launch
 - Performance Monitoring



How We Stand Out?

Stand Out?

01

Direct Alert to
Nearest Police
Station and
Allows users to
send emergency
alerts with live
location

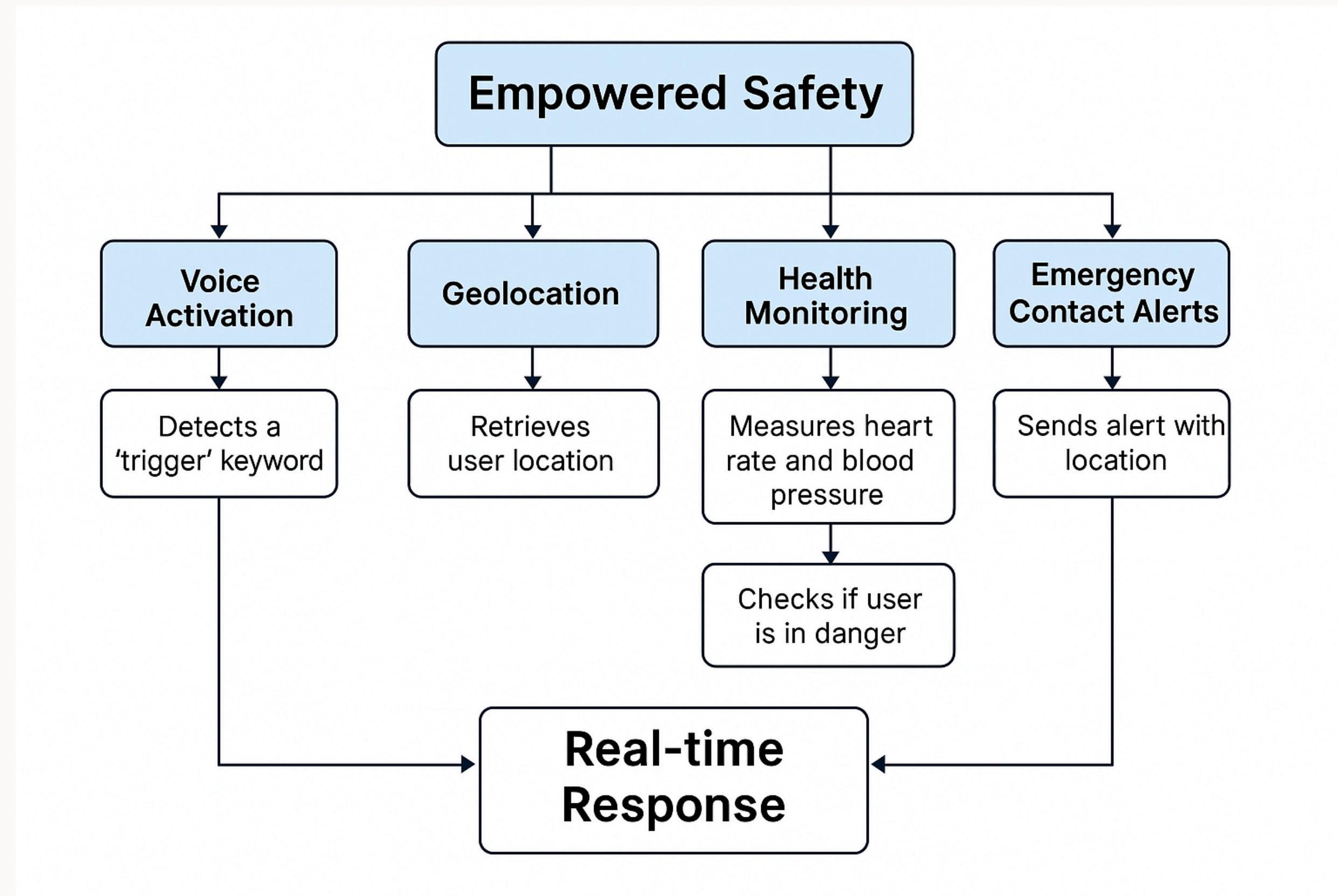
02

Provides
permission-based
location sharing,
allowing users to
control when and
with whom their
location is shared,
thereby balancing
safety with
personal privacy.

03

Integration of
photoplethysmogr
am (PPG)-based
heart rate and
blood pressure
monitoring to
detect abnormal
stress patterns.

Flowchart



FUTURE SCOPE

The solution is designed to improve the efficiency, reliability, and accessibility of emergency responses while addressing the shortcomings of current systems.

By empowering users with advanced technology and creating robust communication channels with emergency contacts, the project bridges the gap between victims and responders. It transforms personal safety by ensuring that help is always accessible when it is needed most.

This project thus aims to address the limitations of existing safety solutions by combining state-of-the-art technology with automated and seamless emergency alert systems, ensuring timely and reliable responses while strengthening local resilience during crises.

Thank you

