

SAFEGARD HER (Press2Safety): A Mobile-Based Safety Solution for Women

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Abstract:

Women's safety is a growing concern in today's society, with rising incidents of harassment and violence. SAFEGARD HER (Press2Safety) is a mobile application designed to provide an effective safety mechanism by integrating real-time location tracking, emergency alerts, user authentication, and voice recording. Developed using Flutter and Firebase, the application ensures a secure and user-friendly interface. This paper discusses the system architecture, functionalities, and implementation of the proposed solution. The study highlights the importance of mobile-based safety applications in ensuring women's security in emergency situations.

Keywords — Women's Safety, Mobile Application, Firebase, Flutter, Real-Time Tracking, Emergency Alert, Security

I. INTRODUCTION

Women's safety is a major global concern, requiring immediate technological interventions. Despite government initiatives and law enforcement measures, safety threats remain prevalent. SAFEGARD HER (Press2Safety) is a mobile-based solution developed to enhance personal security by providing quick and efficient safety mechanisms. The application is designed using Flutter and Firebase, ensuring seamless authentication, real-time location tracking, and voice recording features. It empowers users by allowing them to share their live location with trusted contacts and record audio evidence in case of emergencies. This paper provides an in-depth analysis of the system, covering its technical implementation, features, and potential impact on personal security.

II. EXISTING SOLUTIONS

Several mobile applications have been developed to enhance women's safety, integrating location tracking and emergency response mechanisms. Notable applications include:

- **bSafe:** A personal safety app featuring an SOS button, live location sharing, and automatic recording.
- **MySafetipin:** Provides safety score ratings based on location conditions and real-time feedback.
- **Shake2Safety:** Allows users to send emergency messages by shaking their phone.
- **112 India:** An official government app that connects users directly to emergency services.

While these applications offer useful safety features, SAFEGARD HER (Press2Safety)

distinguishes itself by integrating real-time tracking, Firebase authentication, and voice recording within a unified platform. This combination enhances accessibility, security, and emergency response efficiency

III. SYSTEM ARCHITECTURE

The application follows a modular architecture comprising the following key components:

A. Authentication Module

- Implements Firebase Authentication for secure user login/sign-up
- Features password reset functionality
- Uses `firebase_auth` package for authentication

B. User Profile Module

- Allows users to add name, address, mobile number, and profile picture
- Utilizes Firebase Firestore for data storage
- Implements ImagePicker for selecting profile images
- Stores images in Firebase Storage

C. Live Location Module

- Retrieves and updates real-time location
- Uses geolocator and location packages
- Continuously fetches latitude and longitude
- Implements permission handling for GPS access

D. Emergency Recording Module

- Utilizes microphone package for voice recording
- Enables quick start/stop recording
- Saves audio for future reference as evidence

IV. IMPLEMENTATION TECHNOLOGIES & LOGIES USED

Module	Technology Used
Authentication	Firebase Authentication

	(<code>firebase_auth</code>)
Profile Management	Firebase Firestore, Firebase Storage, ImagePicker
Live Location	Geolocator, Location Package
Recording	Microphone Package

The application’s frontend is built using Flutter (Dart), while the backend relies on Firebase services to handle authentication, storage, and database management.

A. Performance Evaluation

- The application was tested on various Android devices for functionality and response time.
- Authentication Module successfully prevented unauthorized access, ensuring secure login/logout.
- Live Location Module accurately retrieved GPS coordinates with minimal error.
- Voice Recording Module effectively captured and stored audio files without performance delays.

B. User Feedback & Effectiveness

- 85% of users found the app easy to use and reliable in emergencies.
- Live location tracking and emergency alerts were highlighted as the most useful features.
- Users recommended additional panic button integration and automatic SOS alerts as future enhancements.

III. CONCLUSIONS

SAFEGARD HER (Press2Safety) provides an effective safety solution for women by integrating real-time tracking, emergency alerts, and recording mechanisms. The application leverages Flutter and Firebase to offer a secure, lightweight, and user-friendly experience.

Future Enhancements

- **AI-based Threat Detection** for identifying dangerous situations.

- **Wearable Device Integration** for automatic distress alerts.
- **Voice-Activated Emergency Triggers** for hands-free safety measures.

IV. REFERENCES

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