



Android Application for Women Safety using Flutter

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Abstract : The Android application created with Flutter and intended to improve women's safety is presented in this suggested project. With the app's real-time location tracking feature, users can let reliable contacts know where they are at all times. It incorporates an emergency alert system that, in dire circumstances, activates distress signals, including visual and auditory alarms. The software uses GPS technology to track the user's location, providing friends and family with a dependable way to keep an eye on their safety. A panic button on the app allows for quick assistance. Women feel more secure when they can easily access safety features thanks to an intuitive design. The software also allows users to communicate with local officials directly through in-app messaging. By using Flutter, cross-platform interoperability is ensured, increasing the application's user base. In general, this creative idea prioritizes and addresses women's safety concerns by utilizing contemporary mobile technologies.

IndexTerms – Women Safety, Flutter, SOS Alert, Real-Time Location Tracking, Firebase.

I. INTRODUCTION

In the current era, it is imperative to address safety issues, particularly those pertaining to women, by making use of the ubiquitous presence of smartphones. This Android app offers a variety of features targeted at improving women's safety and security above and above the standard, and it is painstakingly made to be a reliable friend. It's an innovative strategy that combines smart design and state-of-the-art technology to give women a sense of security and belonging. Since smartphones are almost always with us, this software becomes a lifesaver for women's safety. Beyond just emergency situations, its capabilities include discrete notifications, real-time location sharing, and insights for an all-encompassing safety solution. It's not simply about getting help right away. With its advice on safety precautions, legal rights, self-defense techniques, and connections to support agencies, the app serves as an instructional tool that gives women the tools they need to take charge of their lives.

Through the platform, users may obtain crucial information such as police station locations and medical shop details, thereby expanding the platform's support network and offering crucial resources during emergencies. It's important to make regular adjustments depending on customer feedback. They make that the software is dependable, easy to use, and adapts to its users' changing needs. This safety app's capacity to immediately send messages and notifications to approved guardians or emergency contacts is one of its core features. Users have the option to turn on a discreet alert in times of emergency, which will notify pre-set contacts right away. In order to make sure that loved ones are notified as soon as the user feels in danger or comes across an emergency, this notice also contains the user's current position.

II. PROPOSED WORK

The primary goal of the suggested system is to create an affordable GPS-based woman tracking system that can be used for a variety of personal purposes by utilizing widely available devices, such as smartphones with Android enabled. The system's primary goal is to monitor the owner of an Android-enabled phone by obtaining the target user's longitude and latitude. The multidimensional design of the women's safety app aims to protect women's security and well-being in a variety of settings. Its main goals are location sharing and emergency calling, making it easier for emergency contacts or law enforcement to respond quickly by automatically revealing the user's location in real time. The software also provides personal safety tracking, which is very helpful for people who are traveling alone or in unknown places. With an emphasis on improving personal safety, it has a variety of features suited to many scenarios, such as the ability to provide covert aid through functions like the Fake Call Timer. Through a Friends List and community-based features, the app also encourages community involvement, which builds a sense of safety and support.

2.1 Problem Statement of the Project

Women today frequently worry about their safety, which calls for a workable response. In order to solve the problem, our project will develop an Android app that is easy to use and focuses on women's safety. It's possible that existing safety precautions aren't aggressive enough or don't take advantage of how common smartphones are. The app will provide discrete warnings, real-time location sharing, and a supportive community. It aims to close the knowledge gap about easily accessible safety precautions and women's legal rights. Frequent updates will guarantee that the software remains flexible enough to meet changing needs, guided by user feedback. The intention is to provide women with a dependable, technologically advanced instrument that gives them a sense of security in their everyday lives.

2.2 Thesis Layout

The proposed application showcases the creation of an extensive app for women's safety that was made with the help of Flutter, a cutting-edge, cross-platform framework driven by the Dart programming language. By offering a range of emergency alert features, such as the option to covertly text or call trusted contacts in an emergency, the program puts user safety first. The system provides real-time data processing and user position monitoring by utilizing the capabilities of Flutter and Dart, guaranteeing a dependable and effective mobile solution for women's safety.

III. REQUIREMENT SPECIFICATION

A comprehensive description of a software system that will be developed is contained in a software requirements specification (SRS). Together with a set of Tests that outline the user interactions the product must provide, it outlines both functional and non-functional requirements.

3.1 Hardware Specification

- Processor: Snapdragon, Dual Core.
- Memory Space: 50 Mb or more.
- RAM: 512 MB or more.
- GPS enabled Android Phone.

3.2 Software Specification

- Operating System-Android
- API Level-24
- Android 7.0
- Disk usage-50 Mb

3.3 Functional Requirements

- **Location Services:** Integrate GPS functionality for real-time location tracking and sharing.
- **Emergency Alert Feature:** Develop a discreet alert mechanism activated by users during emergencies, promptly notifying pre-set contacts with the user's location.
- **Educational Resource Database:** Create a comprehensive database containing safety guidelines, legal rights information, and self-defense tips for women.
- **Support Network Information:** Include features providing essential information, such as police station locations and bus stations, to enhance the app's support network.

- **Secure Data Storage:** Ensure robust security measures for the storage of user data, emphasizing encryption and compliance with privacy standards.

IV. SYSTEM DESIGN

Developing a women's safety app with Flutter and Dart requires a user-centered approach. First, define goals like emergency response and community support. Research existing apps to identify gaps and leverage Flutter's strengths. Ensure legal compliance and ethical data practices. Design core features using Flutter's widgets and Dart's structure. Finally, build the app with a user-friendly interface and seamless integration of safety features.

4.1 System Architecture

The system architecture, as shown in the figure 4.1, involves the proposed application continuously monitoring the Alert button, waiting for Alerts, indicating an emergency situation. Upon detecting this specific sequence, the app springs into action, activating the device's GPS to retrieve the user's precise location coordinates and send the location details to parents, friends, or guardians. The system will not only send the user's location but also dispatch emergency messages to the parents, friends, or guardians.

4.2 Emergency Alert Module

This Android women's safety app, built with Flutter and Dart, prioritizes user safety. It features an emergency alert module that, when activated, sends a message to the user's designated trusted contacts. Along with the message, the app leverages Flutter's location tracking capabilities to share the user's real-time location, providing crucial information for a swift and effective response during emergencies.

4.3 Application Flow Diagram

The Flow Diagram as shown in the figure 4.3 illustrates the user journey after a successful login (new user or existing). Upon login, you'll be directed to the home screen featuring:

- Emergency SOS: Quickly trigger an emergency alert.
- Contacts: Manage your trusted contacts for emergency alerts.
- Emergency Calling: Access emergency services directly.
- Settings: Personalize app settings and preferences.

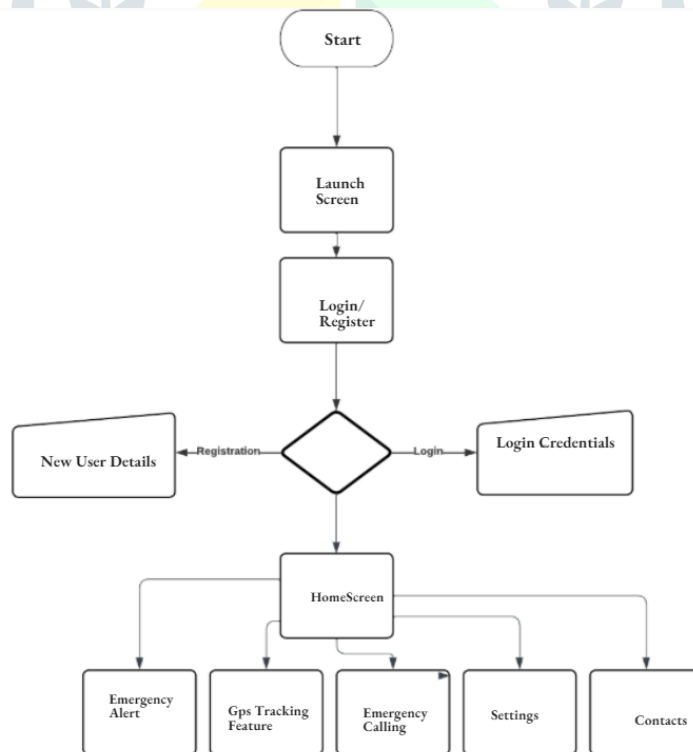


Fig 1: Application Flow Diagram

V. RESULTS

The developed Android women's safety app, built using Flutter, showcases the framework's capability to create a user-friendly and functional application addressing a critical social concern. The app's features were successfully implemented, demonstrating Flutter's suitability for cross-platform development of mobile applications with a focus on social impact."

5.1 User Interface

- **Discreet SOS at Your Fingertips:** This screenshot shows the easy access to the SOS alert feature in my women's safety app.
- **Real-Time Location Sharing:** This UI element allows users to share their live location with trusted contacts for real-time peace of mind.
- **Quick Access to Resources:** A dedicated section for vital emergency contact information and support resources, all within the app.

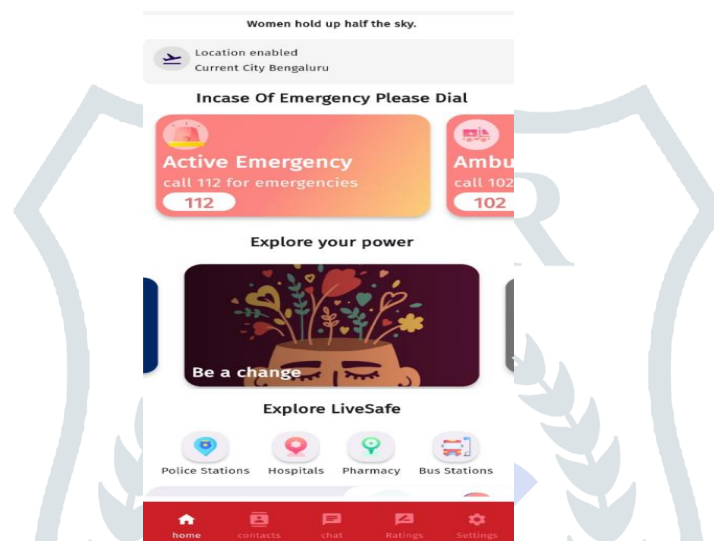


Fig 2: App's User Interface

5.2 Managing Trusted Contacts

- **Easy Contact Management:** Effortlessly add, edit, and manage your trusted contacts directly within the app.
- **Discreet SOS Alerts:** Send alerts to pre-registered contacts with a single tap, ensuring your safety circle is notified instantly.
- **Real-Time Location Sharing:** Share your live location with trusted contacts for added peace of mind, allowing them to monitor your movements

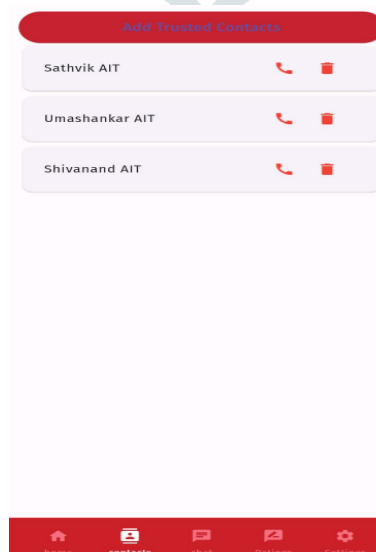


Fig 3: Adding contacts

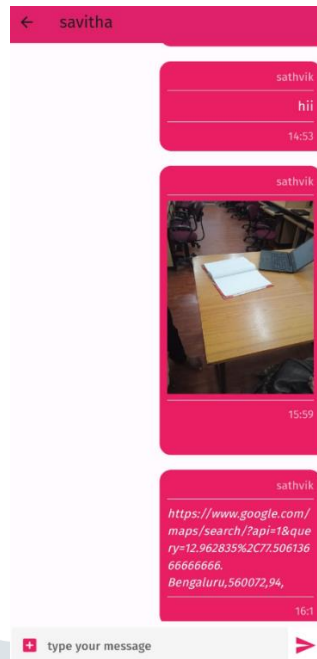


Fig 4 : Chatting with contacts

5.3 Location Reviews

- **5-Star Safe Havens or 1-Star Caution Zones:** Rate locations based on your experience, helping others make informed decisions.
- **Quick and Easy Reviews:** Share your feedback with a simple tap-based rating system, helping others stay informed.

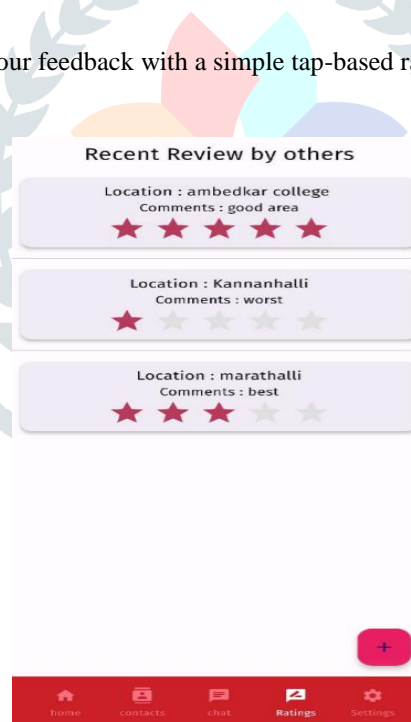


Fig 5: Location Ratings and reviews

5.4 Emergency Alerts

A critical feature of this women's safety app is the emergency alert functionality. When a user triggers an emergency alert through the app, a well-defined sequence of events ensures timely notification of trusted contacts. Upon activation, the app transmits an emergency alert message to the user's designated trusted contacts. This message typically includes:

- **Alert Notification:** A clear message informing the contact of the user's emergency situation.
- **User Location:** Crucial information about the user's current location, often in the form of a real-time map link or GPS coordinates.

- **Optional Additional Information:** Depending on the app's design, the user might have the option to include additional details within the alert message, such as a personalized message or specific needs.

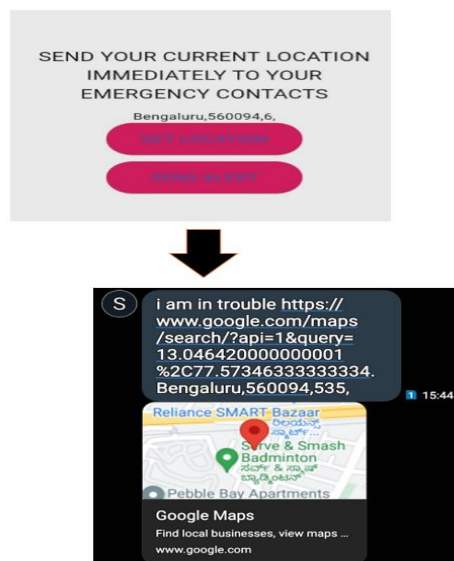


Fig 6: Sending emergency alerts to contacts along with location

V. CONCLUSION

The proposed project is a women's safety app designed to empower users with features that address emergency situations and promote preventive measures. This app leverages the strengths of Flutter and Dart for cross-platform functionality, ensuring accessibility on a wide range of devices. The core functionality focuses on sending emergency alerts to designated trusted contacts. These alerts include the user's location, providing crucial information for a swift response. Additional features like SOS buttons, discreet contact options, and access to emergency services further enhance user safety. The app's development process emphasized user-centered design principles and legal compliance with data privacy regulations. This ensures a trustworthy and secure platform for women. By utilizing the strengths of Flutter and Dart, the app offers a user-friendly interface and efficient development process. This combination of technology and user-centric design empowers women with the tools to navigate potentially dangerous situations and promote a sense of security.

VI. REFERENCE

- [1] Prof. Kishore Sakure , Prof. Pramila Mate , Prof. Randeep Kahlon and Prof. V. B Gaikwad, "WOMEN SAFETY APP", IJRASET, Volume 10, Issue III, Ma2022, pp:374-381
- [2] Ranjana Gupta, Yashpreet Gaur , Sakshi Kumari ,Nisha Gupta ,Sunil Kumar Yadav "INTELLIGENT SAFETY APPLICATION FOR WOMEN: SURVEY",ISSN, VOLUME 03, ISSUE 04, April 2022, pp : 867-870.
- [3] Manisha Sharma , Akhil Bansal , Akansha Sharma , Anisha Verma , Prof. Vinay Singh "AN ANDROID BASED WOMEN SAFETY APP", ISSN, VOLUME 8 , ISSUE 3, April 2022, pp: 516-521.
- [4] Y.Deepika & K.B.S.L Vamsi "WOMEN SAFETY SYSTEM WITH NERVE STIMULATOR USING IOT TECHNOLOGY", International Journal of Research Publication and Reviews, VOLUME 3, ISSUE 11, May 2022, pp: 2752-2755.
- [5] Abhirooban T & Vidhya B "WOMEN SAFETY APPLICATION WITH HIDDEN CAMERA DETECTOR & LIVE VIDEO STREAMING", IJCRT, Vol 11 ISSUE 5, MAY 2022 pp: 234-243.
- [6] Sunil Kumar Sharma & P. Ranjana "WOMEN SAFETY-SAVIOUR ANDROID APPLICATION", IRJET, VOLUME 04 , ISSUE 05 , July 2022, pp:300-308.
- [7] Dr. K Srinivas, Dr. Suvarna Gothane, C. Saisha Krithika, Anshika, T. Susmitha Bramarambika Thota "ANDROID APP FOR WOMEN SAFETY ", International Journal on Cybernetics & Informatics (IJCI), VOLUME 10, No 1/2, May 2021, pp:423-427.

[8] Mohamad Amirul Syafiq Bin Peer Mohamed & Dahlila Putri Dahnil “DEVELOPMENT OF GESTURE -BASED WOMEN SAFETY APPLICATION”, ISSN, Volume 17, ISSUE 1, Ver- I ,June 2021, PP: 29-34.

[9] R Rajesh & V Akshaya “WOMEN SAFETY ANDROID APPLICATION WITH HARDWARE DEVICE”, ISEDJ, VOLUME 8, ISSUE 12, April 2021 , pp:591-598.

[10] Sunil Ghane & Sakshi Milkhe “Technology100 – AN APPLICATION FOR WOMEN SAFETY ”, ISSN, VOLUME 7, ISSUE 17, May 2020,pp:179-183.

