Mobile Application Development Laboratory

GUARDIAN ALERT-The SOS App

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ABSTRACT

:>SOS App for Personal Safety is a mobile application designed to enhance personal security, especially for vulnerable groups like women, children, and the elderly. The app enables users to quickly alert trusted contacts and authorities with their live location at the press of a button.

:>Featuring a simple, user-friendly interface, the app allows easy registration and emergency contact setup. In an emergency, pressing the SOS button sends real-time GPS coordinates via SMS or internet. Key features include voice alerts, silent mode, fake call simulation, and integration with emergency services.

:>Built with modern mobile technologies, the app ensures high availability, accurate location tracking, quick response, and prioritizes data privacy with minimal user interaction during distress.

Need for the Proposed System

:>In today's unpredictable and fast-paced world, personal safety is a growing concern, especially for vulnerable groups such as women, children, and the elderly.

:>Existing emergency systems are often delayed, non-personalized, or inaccessible during critical moments. There is a clear need for a quick, reliable, and easy-to-use solution that can instantly notify trusted contacts and emergency services with accurate real-time location data.

:>The proposed SOS App addresses this gap by offering an immediate response mechanism through a single tap. It ensures rapid communication, discreet operation in dangerous situations, and dependable location tracking — making it a vital tool for enhancing personal safety and peace of mind.

Advantages of the Proposed System

Instant Emergency Alerts – Quickly notifies trusted contacts with real-time location at the press of a button.

User-Friendly Interface – Easy to use for people of all age groups, even in panic situations.

Multiple Safety Features – Includes voice alerts, silent mode, fake call, and emergency service integration.

Works with Low Connectivity – Sends alerts via SMS or internet, ensuring reliability in poor network areas.

Data Privacy and Security – Ensures sensitive user data is protected and used responsibly.

Literature Survey

Paper 1: Himmat App by Delhi Police

Advantages:

- Sends real-time alerts directly to police with location data.

Disadvantages:

- Limited to Delhi region and requires prior registration.

Paper 2: VithU App

Advantages:

- Quick activation by pressing the power button twice.

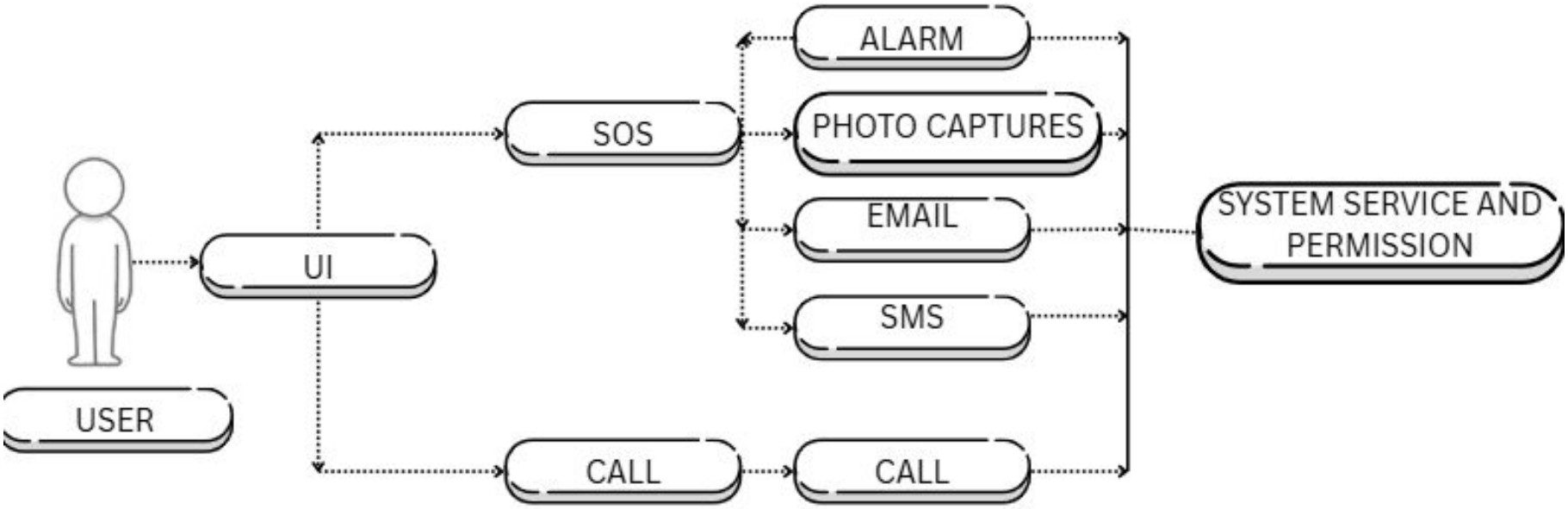
Disadvantages:

- Lacks features like fake calls and silent alerts.

Main Objective

- To design a mobile application that enhances personal safety during emergencies.
- To enable users to send instant SOS alerts with real-time location to trusted contacts.
- To ensure a simple and intuitive interface for quick access during panic situations.
- To provide reliable communication through SMS or internet, depending on availability.

Architecture



System Requirements

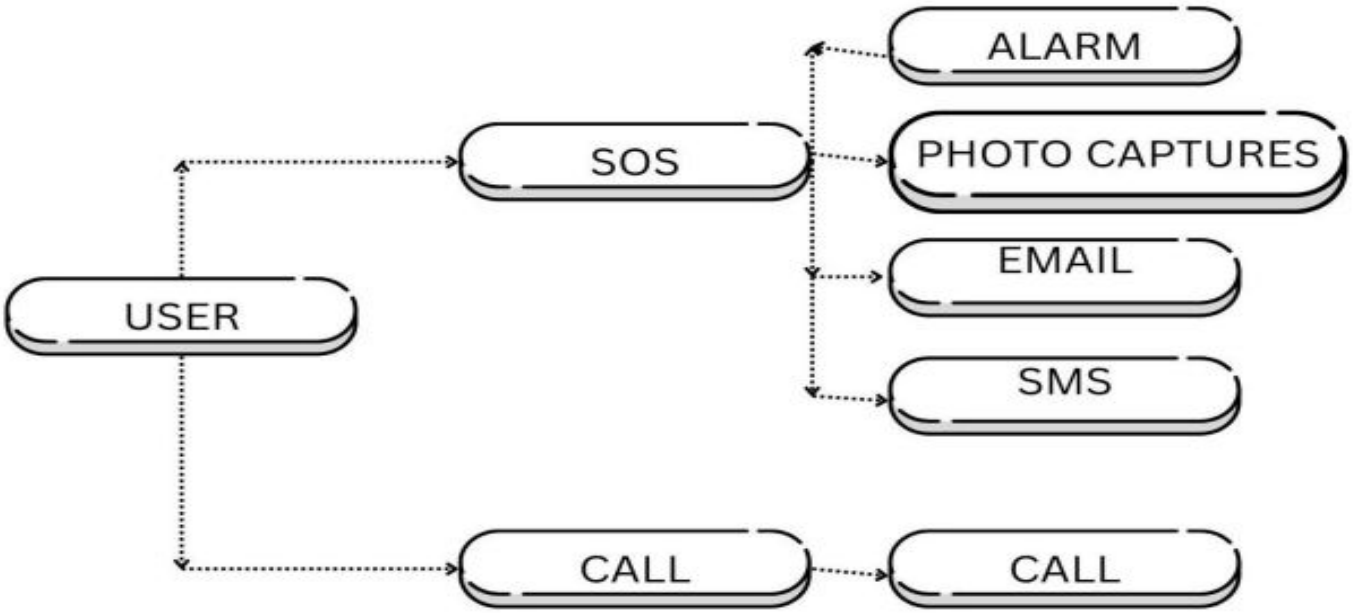
Hardware Requirements:

- Smartphone with Android 6.0+ or iOS 10.0+
- Minimum 2 GB RAM and 1 GHz Processor
- internet connectivity (Wi-Fi or mobile data)

Software Requirements:

- Development tools: Android Studio (Kotlin)
- Android permissions for SMS,Email, Camera access

Functional Description



SOS Alert and Notification System

This module handles the triggering of the SOS alert. Upon pressing the SOS button, the app sends real-time location data to registered emergency contacts and optionally, authorities. It also includes features like silent mode and fake call simulation.

Process Design

When the **SOS button** is pressed, the app triggers a series of actions, including sending **SMS**, **email**, and making a **call** to emergency contacts

Sub-Processes:

1. SOS Button Pressed

- The user presses the **SOS button** on the app.

2. Compose SOS Message

- The app creates a distress message: "I need help! Please contact me urgently."

3. Send SOS Alert via SMS

- The app sends the **SOS message** to **emergency contacts** via SMS.

4. Send SOS Alert via Email

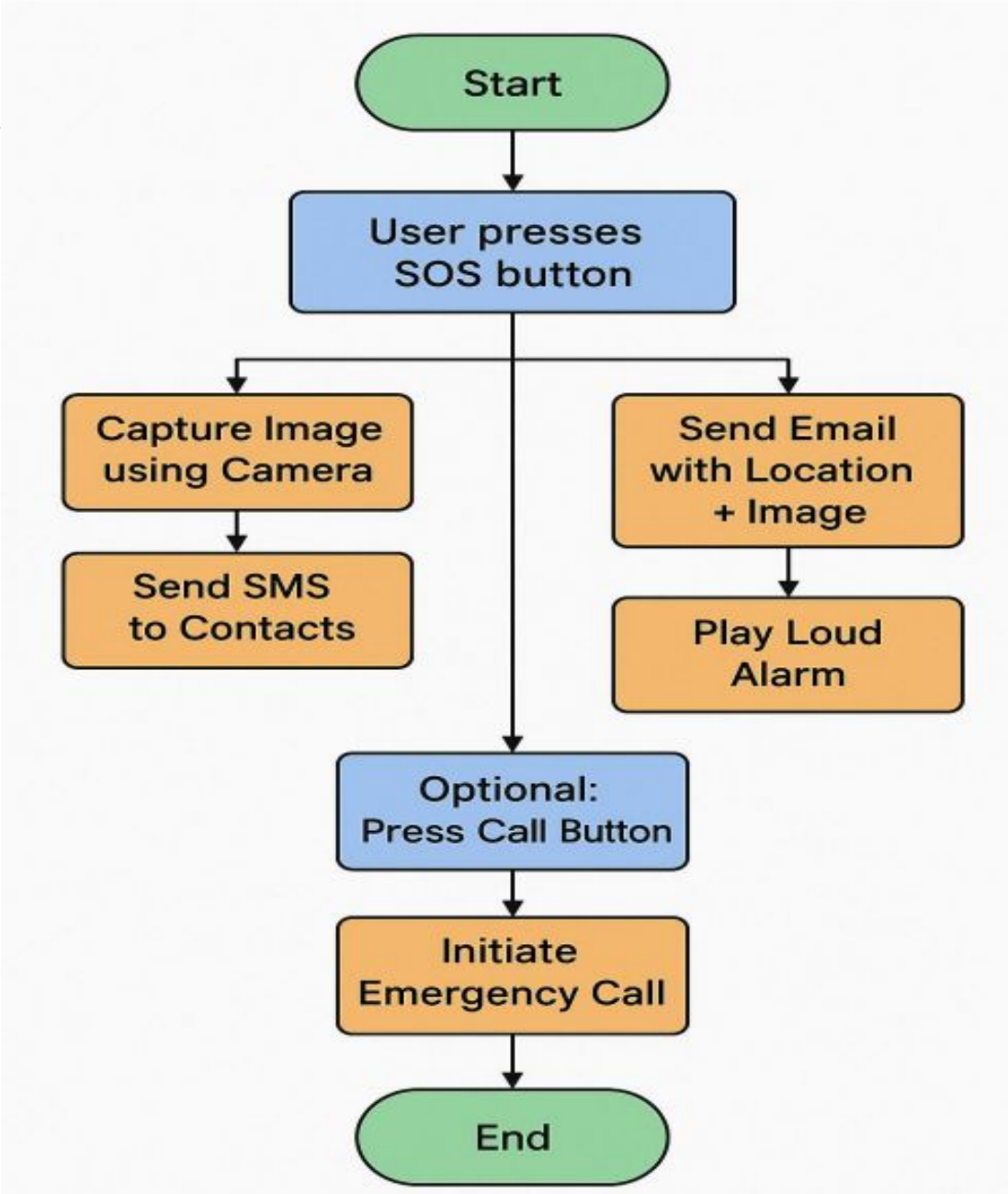
- If internet is available, the app sends the **SOS message** via email to emergency contacts.

5. Make Emergency Call

- The app **automatically calls** one or more **emergency contacts** or predefined emergency numbers.

6. Confirmation to User

- The app displays a confirmation message: "SOS alert sent successfully!"


Start
User presses SOS button
Capture Image using Camera
Send SMS to Contacts
Send Email with Location + Image
Play Loud Alarm
Optional: Press Call Button
Initiate Emergency Call
End

Implementation

1. Home Screen with SOS Button

Fig 3.4

2. Call Trigger U

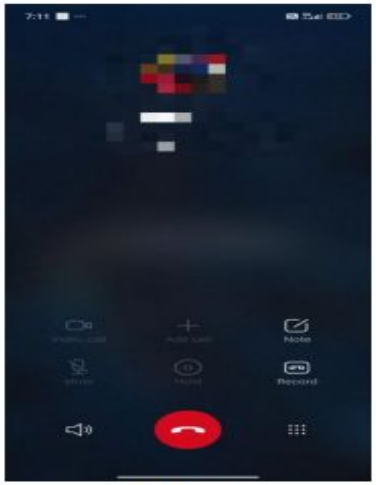
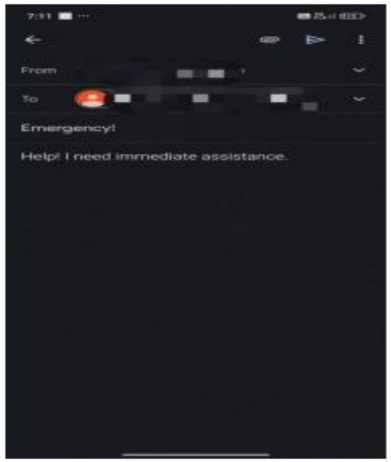


Fig 3.5

3. Photo Capturing-Using Camera

4.Sent Email UI



Conclusions

In conclusion, the **SOS App for Personal Safety** provides a reliable and user-friendly solution for individuals in distress, ensuring immediate access to emergency support. By leveraging **SMS**, **email notifications**, and **emergency calls**, the app enhances personal safety and offers peace of mind to users. Its implementation in **Kotlin** ensures a smooth and responsive experience, making it a valuable tool for anyone seeking to stay safe in potentially dangerous situations.

Future Enhancement

- **Real-Time Location Sharing**: Integrating GPS functionality to send real-time location updates along with the SOS message, enabling emergency contacts and authorities to track the user's precise location during distress.

- **Integration with Emergency Services**: Adding the ability to directly contact local emergency services (police, ambulance) via the app, streamlining the process of getting immediate help in critical situations.

References

1. Android Developer Documentation – https://developer.android.com
2. Kotlin Programming Language Documentation – https://kotlinlang.org/docs/home.html
3. Android SMS & Telephony APIs – Android Developers – https://developer.android.com/guide/topics/permissions/overview
4. Android CameraX API – https://developer.android.com/training/camerax
5. Android Intents and Broadcasts – https://developer.android.com/reference/android/content/Intent
6. Stack Overflow – https://stackoverflow.com – Used for debugging and code-specific clarification

Queries…

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Demonstration

Thank You…!