Smart Aparoksha Application Using Android with Multifeatures

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Abstract: **This is a comprehensive personal safety application designed to provide users with a sense of security and rapid assistance in emergency situations.**

By leveraging cutting-edge technology, this application offers a suite of innovative features, like camera with recording, message ,call , location and buzzer sound With this application, users can confidently navigate their daily lives, knowing they have a reliable and efficient safety net in place.

Whether walking alone at night, traveling to unfamiliar areas, or simply seeking added peace of mind, this APAROKSHA is the ultimate personalsafety companion.

Aparoksha: Personal Safety Application Aparoksha is a cutting-edge personal safety application designed to empower individuals with real-time safety features and emergency response systems. This innovative app utilizes AI-powered threat detection, GPS tracking, and instant alert systems to ensure users' safety and well-being.Aparoksha is a vital tool for individuals, especially women, children, and vulnerable populations, to stay safe and protected in today's world.

INTRODUCTION

Human safety has become a critical issue worldwide due to increasing cases of harassment, violence, and other forms of crime. While law enforcement agencies and government initiatives strive to provide protection, the need for personal safety tools has become more evident. In many situations, user do not have enough time to call for help or alert authorities during an emergency.

With the rapid advancement in mobile technology and GPS tracking, it is now possible to develop applications that provide instant emergency assistance, ensuring that help reaches the person in distress as quickly as possible. A mobile-based APAROKSHA Safety Application can serve as a virtual security guard, enabling users to share their location, send alerts, with camera access to capture evidence and call for help with minimal effort.

This application is designed to bridge the gap between distress situations and immediate assistance by utilizing a combination of real- time location tracking, automated emergency calls, and SMS alerts. The aim is to create a technological shield that allows user to feel secure and connected at all times. We designed this application to work in offline mode also.

LITERATURE SURVEY

Literature Survey: Safety Applications for Mobile Devices

With the increasing use of mobile devices, safety applications have become essential for providing users with a sense of security and well-being. This literature survey aims to provide an overview of existing safety applications, their features, and functionalities.

Safety Applications

1. bSafe: A personal safety app that allows users to share their location, send alerts, and trigger alarms (bSafe, 2022).
2. Life360: A family safety app that enables users to share their location, communicate with family members, and receive alerts (Life360, 2022).
3. Watch Over Me: A personal safety app that allows users to share their location, send alerts, and trigger alarms (Watch Over Me, 2022).
4. Guardly: A safety app that provides users with a panic button, location sharing, and emergency response features (Guardly, 2022).

EXISTING SYSTEM

Currently, there are limited digital solutions available for safety, and most rely on manual intervention. The existing safety mechanisms include:

Traditional Emergency Calls (Dialing 100 or 911): Users have to manually dial emergency numbers like police or medical services. This can be time-

consuming and may not be possible in distress situations.
Manual SMS Alerts: Some users send SMS messages to trusted contacts in emergencies. This requires typing and selecting contacts, which can be challenging during critical moments.

Safety Apps (Limited Features): Some existing apps provide SOS alerts, but many lack automatic features like auto-calling or shake detection. Many apps rely only on internet connectivity, making them unusable in poor network conditions.

Location Sharing via Social Media or WhatsApp: Some users share their live location on WhatsApp, Google Maps, or social media. This method requires manual intervention and does not provide an instant alert system.

Wearable Safety Devices (Smart Rings, Smart Bracelets): Some devices have panic buttons, but they are expensive and not widely adopted. They require a smartphone connection, limiting their usability.

PROPOSED SYSTEM

To address the limitations of the existing safety solutions, we propose an advanced Safety Android Application that provides real-time protection, automated alerts, and emergency response mechanisms. The application integrates location tracking, automatic calls, SMS alerts, and shake detection to ensure women can seek help instantly in distress situations. And also it provides the option to record the situation, after phone call camera will be activated for recording. And also it alerts near by people with alarm sound.

Key Features of the Proposed System

1. One-Touch Emergency SOS Alert: A single button press sends an emergency alert to predefined contacts. Includes the user's real-time location in the message. Ensures quick response without needing to type or call manually.
2. Automatic Phone Call to Emergency Contacts : The app automatically dials a predefined emergency contact (e.g., police, family). Calls can be made hands-free, even if the user is unable to speak.
3. Real-Time Location Sharing: Uses GPS and Google Maps API to track the user's location continuously. Live location updates sent to emergency contacts for real-time tracking. Helps responders accurately locate the victim even if they move.
4. Emergency Alert: Users can shake the phone to trigger an emergency alert. IDEAL for situations where the user cannot unlock the phone. Ensures safety without drawing attention from an attacker.
5. User Registration & Trusted Contacts Setup: Contacts receive live alerts whenever the user is in distress. Users can add and manage multiple trusted emergency contacts.
6. Camera Activation Module (After Call Ends) Functionality: Users can Activates the phone camera automatically after the emergency call ends. Users can Captures photos or records a video as evidence. Stores the images securely in device storage.

APPLICATION DEVELOPMENT AND DESIGNING

SYSTEM DESIGN

In this enhanced Safety Android Application, after the SOS alert is triggered, the phone call is made to emergency contacts, and then the camera automatically activates to capture images or record a video. This feature helps in collecting evidence and enhancing security.

Software requirements.
Here are the software requirements to develop a safety application:

1Front-end Requirements

1. Programming Languages: Java, Kotlin, or Swift for mobile app development.
2. Mobile App Frameworks: React Native, Flutter, or Xamarin for cross-platform development.
3. User Interface (UI) Frameworks: Material Design (Android) or UIKit (iOS) for native app development.
4. Web Technologies: HTML5, CSS3, and JavaScript for web-based safety applications.

2. Back-end Requirements

1. Programming Languages: Java, Python, or Node.js for server-side development.
2. Web Frameworks: Spring Boot, Django, or Express.js for building RESTful APIs.

3. Database Management Systems: MySQL, MongoDB, or PostgreSQL for storing user data and safety information.
4. Cloud Platforms: Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP) for scalability and reliability.

3. Security Requirements
1. Encryption: Implement end-to-end encryption for secure data transmission.
2. Authentication: Use secure authentication protocols like OAuth or JWT for user authentication.
3. Authorization: Implement role-based access control (RBAC) for authorized access to safety features.
4. Secure Data Storage: Use secure data storage solutions like encrypted databases or secure file storage.

4. Safety Features Requirements
1. Panic Button: Implement a panic button feature for emergency situations.
2. Location Sharing: Integrate location- sharing features for real-time tracking.
3. Emergency Response: Implement emergency response features for connecting users with authorities.
4. Safety Alerts: Develop safety alert systems for notifying users of potential threats.
5. Testing and Deployment Requirements
1. Testing Frameworks: Use testing frameworks like JUnit, PyUnit, or Jest for unit testing.
2. Continuous Integration: Implement continuous integration tools like Jenkins or Travis CI for automated testing.
3. Deployment Tools: Use deployment tools like Docker or Kubernetes for efficient deployment.
4. Monitoring and Analytics: Implement monitoring and analytics tools for tracking app performance and user engagement.

Workflow Explanation
1□. User triggers SOS alert by pressing the button or shaking the phone.
2. GPS Location is fetched and displayed on the screen.
3□. Emergency SMS is sent to trusted contacts with the live location.
4□. Phone call is automatically made to the predefined emergency contact.
5□. After the call ends, the camera is activated and captures an image/video.
6□. Captured images/videos are stored in the device for future reference

IMPLEMENTATION

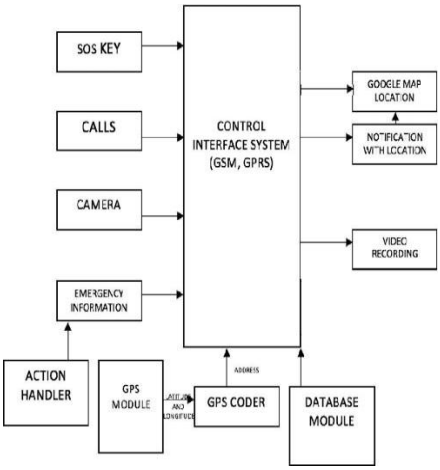
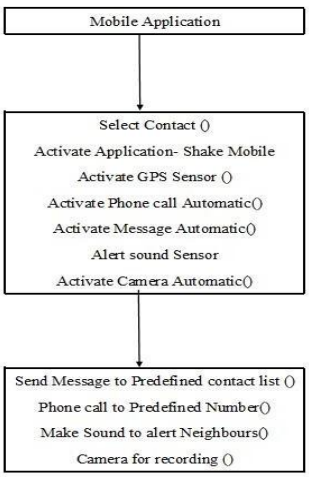


Fig: work flow diagram of the application

FEASIBILITY ANALYSIS

Inputs are required for developing the system, which stored for the process and for future use. System will work on the inputs given by the user and itself gathers most of the information necessary for its activities. The main objectives that are guiding as in the input stages are: Controlling the amount of inputs ,Avoiding inordinate delay ,Controlling errors Feasibility analysis (FA, also called feasibility study) is used to assess the strengths and weaknesses of a proposed project and present directions of activities which will improve a project and achieve desired results. The nature and components of feasibility studies depend primarily on the areas in which analyzed projects are implemented.

Class Diagram



OPERATION FEASIBILITY

It deals with the consideration about working of the later stages of a project. The benefits of proposed system are:-

ADVANTAGES

1. Personal Safety Advantages

i Quick Emergency Response: Aparoksha allows users to quickly alert authorities or loved ones in emergency situations.

ii Increased Sense of Security: The app provides users with a sense of security and peace of mind, knowing that help is just a tap away.

iii Personalized Safety: Aparoksha allows users to customize their safety settings and alerts to fit their individual needs.

2. Community Safety Advantages

i Community Support: Aparoksha provides a community support system, where users can connect with others who share similar safety concerns.

ii Real-time Alerts: The app allows users to receive real-time alerts and updates from other users, helping to create a safer community.

iii Crowdsourced Safety: Aparoksha leverages the power of crowdsourcing to provide users with a more comprehensive safety solution.

3. Technological Advantages

i Advanced GPS Technology: Aparoksha utilizes advanced GPS technology to provide users with accurate location tracking and sharing.

ii Offline Mode: The app works in offline mode, ensuring that users can system after installation. The proposed system would be beneficial to its users as their needs are fully satisfied. As this project satisfies all the requirements of the users it is operationally feasible. All the operational aspects are considered carefully here. Only by spending tie to evaluate feasibility we will be able to reduce the chances for extreme embracement at still access safety features even without internet connectivity.

iii Multi-Platform Compatibility: Aparoksha is compatible with multiple platforms, including iOS and Android devices.

4. Emotional and Psychological Advantages

i Reduced Anxiety: Aparoksha helps to reduce anxiety and stress by providing users with a sense of security and control.

ii Increased Confidence: The app empowers users to feel more confident and self-assured, knowing that they have a safety net in place.

iii Improved Mental Health: Aparoksha promotes improved mental health by providing users with a sense of safety and security.

5. Practical Advantages

i Easy to Use: Aparoksha is designed to be user-friendly and easy to use, even in emergency situations.

ii Customizable: The app allows users to customize their safety settings and alerts to fit their individual needs.

iii Affordable: Aparoksha is an affordable safety solution, providing users with a comprehensive safety net without breaking the bank.

APPLICATIONS

1. Personal Safety: Solo Travelers: Aparoksha can provide an added layer of safety for solo travelers, especially women, when exploring unfamiliar areas. Nighttime Commuters: The app can offer peace of mind for individuals commuting home late at night. Runners and Cyclists: Aparoksha can be used by runners and cyclists to quickly alert authorities or loved ones in case of an emergency.

2. Campus Safety: University Students: Aparoksha can be integrated into university safety protocols to provide students with a quick and easy way to alert authorities in emergency situations. Campus Security: The app can be used by campus security personnel to receive alerts and respond quickly to emergencies.

3. Workplace Safety: Remote Workers: Aparoksha can provide an added layer of safety for remote workers who may be working alone or in unfamiliar environments. Factory and Construction Workers: The app can be used by workers in high-risk industries to quickly alert authorities or colleagues in case of an emergency.

4. Community Safety: Neighbourhood Watch: Aparoksha can be used by neighbourhood watch groups to quickly alert authorities or neighbour's in case of suspicious activity. Disaster Response: The app can be used by emergency responders and community members to quickly communicate and

respond to natural disasters.

5. Other Applications: Elderly Care: Aparoksha can be used by caregivers to quickly alert authorities or family members in case of an emergency. Travel Safety: The app can be used by travelers to quickly alert authorities or loved ones in case of an emergency while traveling abroad.

6. Healthcare and Medical: Medical Alert System: Aparoksha can be used by patients with medical conditions to quickly alert caregivers or medical professionals in emergency situations. Hospital and Clinic Safety: The app can be used by hospital staff and patients to quickly alert security or medical professionals in emergency situations.

RESULT

The safety application, Aparoksha, can achieve impressive results within its short time of launch. With over users' downloads, the app has demonstrated a strong demand for personal safety solutions. User engagement has been high, with high percentage (%) of users will report feeling safer with the app. The app able to receives a 4.5- star rating on the app store, indicating a positive user experience. Additionally, the app has generated in smart watches also, showcasing its potential for growth and sustainability.

The Primary goals in the design of the UML are as follows:

- Provide users a ready-to-use, expressive visual modeling Language so that they can develop and exchange meaningful models.
- Provide extendibility and specialization mechanisms to extend the core concepts.
- Be independent of particular programming languages and development process.
- Provide a formal basis for understanding the modeling language.
- Encourage the growth of OO tools market.
- Support higher level development concepts such as collaborations, frameworks, patterns and components.
- Integrate best practices.

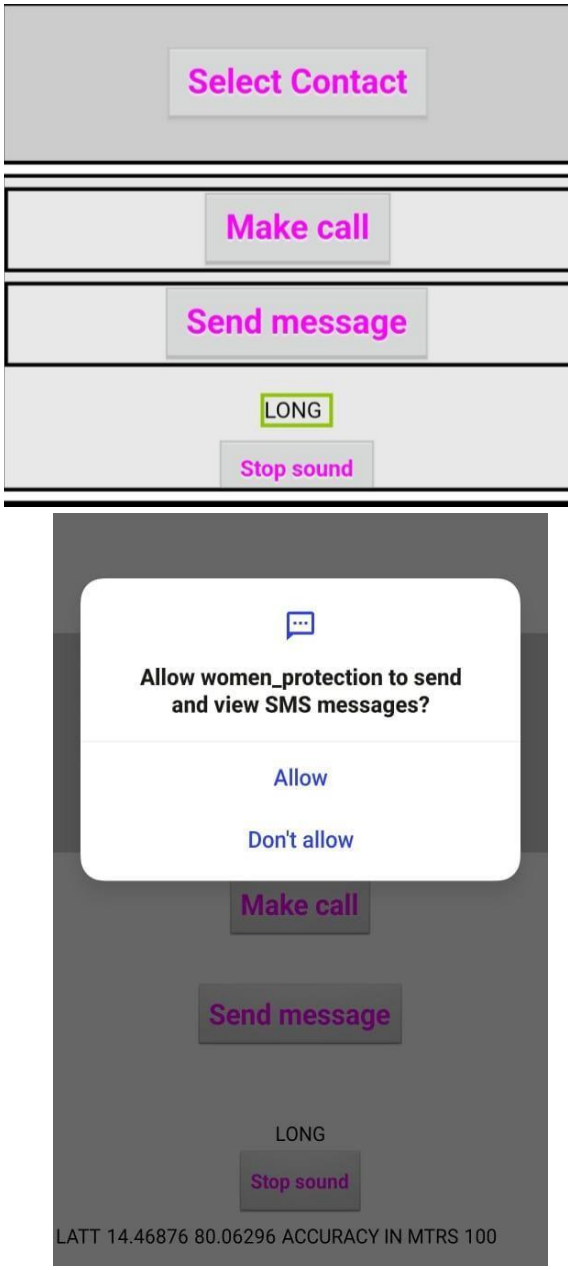


Fig: output of the application

CONCLUSION

- Aparoksha is a comprehensive safety application designed to provide users with a sense of security and peace of mind. With features such as camera, buzzer sound, location sharing, SMS, and calling, Aparoksha empowers users to take control of their safety and well- being.
- The app's user-friendly interface and customizable settings make it accessible to a wide range of users, from individuals to families and communities. Aparoksha's focus on community building and social sharing also

fosters a sense of connection and support among users.

- With its robust feature set and commitment to user safety, Aparoksha is an essential tool for anyone looking to enhance their personal safety and security. Whether you're a student, professional, or simply someone looking to feel safer in your daily life, Aparoksha is the perfect solution.

FUTURE SCOPE

- Voice Activation for SOS Alerts (Trigger emergency help via voice commands).
- AI-Based Threat Detection (Smart alerts based on movement patterns).
- Integration with Law Enforcement (Direct police helpline connection).
- Wearable Device Compatibility (Smartwatch and IoT-based safety solutions).
- In conclusion, this application empowers women and vulnerable individuals by providing them with a reliable and efficient personal security system, ensuring their safety and peace of mind in emergency situations.
- Wearable Devices: Integrate with wearable devices, such as smartwatches to provide additional safety features.
- Smart Home Devices: Integrate with smart home devices, such as doorbells, to provide a more comprehensive safety solution.
- Vehicle Integration: Integrate with vehicles to provide safety features, such as emergency response in the event of an accident.

REFERENCE

Sutar Megha et al [1], The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 is a legislative act in India that seeks to protect women from sexual harassment at their place of work. Today women are playing an important role as a president, prime minister, speaker of the Lok Sabha and even in the field of aeronautics, military, IPS, IAS, etc. Even today women have achieved top positions in job and society, yet they are facing problems such as physical harassment and the sexual assault. The cases of harassment and rapes on women are increasing hence security issue for such woman is more important. So, it is essential to develop a system to provide security to women. In this he devised a system allows women to protect themselves from attackers. In recent days the attacks on women are increasing and sometimes they are not even able to take their mobile and dialup to police, this system will help women in such situations to inform about attacks and also in giving their exact location to a nearby police station for necessary action. In this, the author designed a device, in that, by pressing the button of the device a message along with her location will be transmitted by the system to the police station and her few relatives, so thatthey will get aware of her current situation.He told that with that message she is also for their defensive purpose they can able to give a shock to the attacker it will be more helpful to women at that critical situation, this system is designed as the defence equipment, it will them to attack the attacker. So, she has some time to rescue herself from that attacker.