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Guardian Angel

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Abstract: *Guardian Angel is a safety-focused mobile app designed to protect women in both rural and urban settings. It uses AI to automatically respond to emergencies through voice recognition, scream detection, and gesture-based triggers. The app allows users to send messages, share live locations, and initiate phone calls without physically accessing the phone. Additionally, an emergency alarm helps attract attention in crowds. Guardian Angel aims to empower women by providing a quick and reliable way to connect with their family in times of need, changing society through innovative technology.*

Keywords: safety-focused , mobile app, protect women ,rural and urban settings, AI, voice recognition, scream detection, gesture-based triggers, messages, live location sharing, phone calls, emergency alarm, attention in crowds, empower women, family connection

I. INTRODUCTION

Guardian Angel is a groundbreaking mobile application designed to protect women in both rural and urban environments by providing swift, automated responses to emergencies. Whether walking home late at night or in a crowded marketplace, this app ensures women can easily connect with loved ones or seek immediate help. For instance, if a woman screams at a certain frequency when threatened, the app automatically places a call to her pre-recorded emergency contacts. If she's unable to reach her phone, the app's AI agent can interpret simple voice commands like "help" to take action.

In situations where she may want to alert her family discreetly, a quick shake of the phone sends a message with her location to loved ones. For emergencies in public spaces, Guardian Angel also includes an alarm feature to attract attention from those nearby. By integrating advanced technology like AI, voice recognition, and live location sharing, Guardian Angel offers practical, real-time safety solutions that empower women to feel secure wherever they are.

II. LITERATURE REVIEW

Advancements in mobile technology and AI have greatly improved personal and social safety solutions, yet many women's safety apps remain limited in scope. Most offer only basic features like panic buttons, emergency contacts, or location sharing, which are insufficient for addressing complex and real-world problems.

Additionally, the lack of AI in these apps prevents them from adapting to emergencies, especially when users are unable to interact with their devices. This highlights a need for more intelligent, adaptive, and comprehensive safety solutions to ensure proper personal security.

Existing system

The existing system is an Android-based safety application designed to enhance personal security through a combination of manual and automated features.

Features of the Existing System:

User Management -

The system allows users to register and log in securely, ensuring personalized access to the application.

Firebase Storage is used to store and retrieve user information securely.

Location-Based Services -

Real-time GPS tracking monitors the user's location and enables timely responses during emergencies.

Integration with the Sensor Manager API enhances accuracy and functionality in tracking and alert mechanisms.

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Emergency Handling

SOS Alerts: The application facilitates sending emergency messages to predefined contacts, such as relatives or police, including live location details.

Automated Calls: Enables direct calls to emergency numbers for immediate assistance.

Spy Camera Detection: Detects hidden cameras to ensure privacy and security.

Panic Alerts: Sends location updates and alerts to close contacts in critical situations.

User Engagement

Alerts and information can be shared across multiple platforms, including WhatsApp, email, Bluetooth, Telegram, and Twitter.

Emergency Protocol Integration

The system connects with emergency contacts and predefined services, sending alerts and real-time location updates to ensure quick and effective assistance.

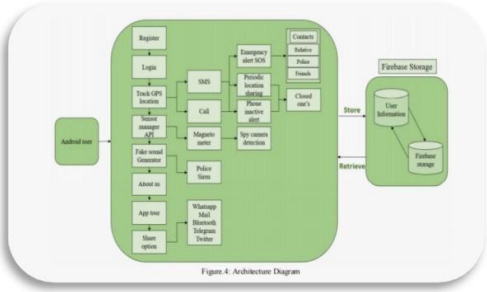

Figure 4: Architecture Diagram

Problem statement

Women face numerous safety challenges in both rural and urban areas where immediate help is required. Despite advancements in technology, there is a lack of comprehensive and user-friendly solutions that can provide real- time assistance, ensure quick communication, and promote a sense of security. Existing safety applications often lack AI-driven capabilities to respond effectively when users are unable to operate their devices during emergencies.

The Guardian Angel App aims to address these challenges by leveraging advanced technology to create a robust safety solution. The app integrates voice-activated commands, AI-based scream detection, live location sharing, and emergency contact automation. It also serves as a combined platform offering access to safety gadgets, creating an ecosystem dedicated to empowering women and enhancing their safety. This app is designed to be an accessible, effective, and reliable companion for women in all environments of crises.

By addressing the critical gaps in existing safety tools, Guardian Angel seeks to revolutionize women's safety using AI tools and innovative technologies.

III. RESEARCH METHODOLOGY

The research methodology for developing the Guardian Angel App involves systematic steps to ensure the application addresses safety concerns effectively and integrates innovative technologies seamlessly.

Requirement Analysis -

Stakeholder Identification: Perform case studies of the affected one. Identify what they truly want and how can Guardian Angel satisfy their need.

Functional Requirements: Define features such as voice-activated commands, scream detection, location sharing, and automated emergency responses.

Technical Feasibility: Evaluate the viability of integrating AI-based functionalities and backend capabilities like real-time communication and Firebase database.

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Data Collection -

Surveys: Collect data on common safety scenarios, user expectations, and preferred app functionalities.

Incident Reports: Analyze safety incidents to identify patterns and scenarios where technology could intervene effectively

Design and Development -

User-Centered Design: Create an intuitive UI based on user personas to ensure ease of use in stressful situations.

Integration of AI: Implement AI algorithms for scream detection, voice recognition, and automated actions like triggering alerts or sending locations.

Backend Architecture: Use Firebase for real-time database management to store and retrieve user data, contact details, and location information.

Deployment and Evaluation -

Pilot Deployment: Roll out the app to a small user group to monitor real-world performance.

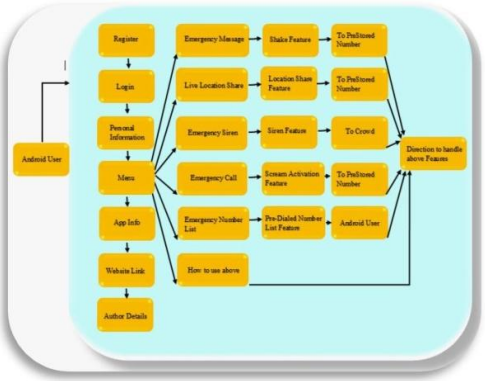
Performance Metrics: Measure key indicators such as response time, accuracy of AI-triggered actions, and user satisfaction.

Iterative Improvement: Refine the app based on feedback and performance analysis to ensure reliability and effectiveness.

Ethical and Social Considerations -

Data Privacy: Ensure compliance with data protection regulations to secure user information and location data.

Awareness Campaigns: Educate users about the app's features and promote its adoption through community outreach.



This methodology ensured a systematic approach to developing the Guardian Angel App, focusing on user needs, technological innovation, and real- world applicability.

IV. RESULT

The proposed system, Guardian Angel, aims to address the limitations of existing women's safety applications by offering a comprehensive and AI-powered solution. Unlike current apps that provide a limited number of features, Guardian Angel integrates multiple safety mechanisms to ensure that women can access help in a variety of emergency situations, both discreetly and automatically.

The Guardian Angel system leverages advanced artificial intelligence (AI) to interpret user speech and contextual information. This AI-driven approach allows the app to automatically take action when the user is unable to manually operate the device. For instance, if a woman is unable to reach her phone but speaks certain keywords or phrases, the AI agent will analyze the context and execute predefined actions, such as calling emergency contacts or sending an alert.

Additionally, Guardian Angel incorporates several innovative safety features:

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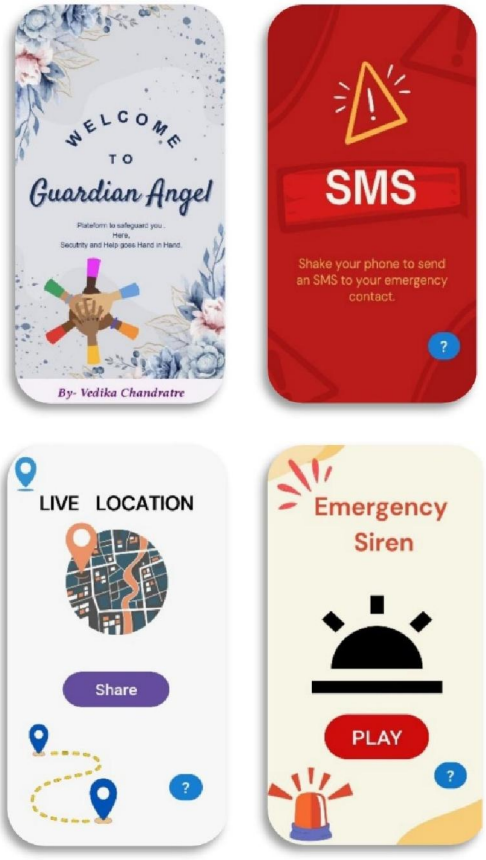
- **Scream Detection**: When the user screams at a specific frequency, the app will automatically initiate a call to pre-recorded emergency contacts, even if the phone is out of reach.
- **Gesture-Based Alerts**: A unique feature allows the user to send an emergency message by shaking the phone three times, enabling discreet communication in dangerous situations.
- **Live Location Sharing**: One-click location sharing provides real-time updates to family or emergency contacts, helping them track the user's location in real-time.
- **Emergency Alarm**: In crowded areas, the app can trigger a loud alarm to attract attention and help the user seek immediate assistance from nearby individuals.
- **AI-Powered Contextual Understanding**: The AI agent can interpret speech and take action without the need for manual interaction, providing assistance when the user is unable to physically access their phone.

The Guardian Angel system is designed to be highly intuitive, offering **hands-free activation** and ensuring quick responses to emergencies. By integrating AI, gesture recognition, and context- based functionality, the app addresses the shortcomings of current solutions and provides a more reliable, adaptive, and proactive approach to women's safety. In essence, Guardian Angel proposes a transformative solution that combines multiple safety features in a single app, with the goal of empowering women to feel safe and connected in any situation, whether in urban or rural environments. This system aims not only to provide immediate support but also to revolutionize how women's security is managed through the use of intelligent technology.



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V. FUTURE SCOPE

Enhanced AI Capabilities

Behavior Prediction: Use AI to analyze patterns and predict potential threats or high-risk situations, enabling proactive measures.

Personalized Safety Suggestions: Provide real-time safety tips and navigation routes based on user activity and location.

Expansion of Features

Community Safety Network: Enable users to report unsafe areas, creating a crowd- sourced safety map that alerts others in real time.

Anonymous Reporting: Allow users to anonymously report harassment or threats to local authorities or organizations.

SafeZone Tracking: Notify users when they enter or leave predefined safe zones set by family or guardians.

Global Reach

Multilingual Support: Expand to support a broader range of languages for global usability.

Cultural Customization: Tailor features to meet cultural and regional safety requirements, ensuring relevancy worldwide.

VI. CONCLUSION

Existing women's safety apps offer limited features and often lack advanced technologies like AI, making them inadequate for comprehensive protection. **Guardian Angel** addresses these shortcomings by integrating multiple safety features, including AI-driven automation, scream detection, and real-time location sharing. Its hands-free operation and versatile responses make it a more effective tool for women's safety, providing reliable protection in various emergency situations and empowering users with smarter technology.

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