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SecureHer

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Abstract: ***This project focuses on developing SecureHer, a digital women's safety and assistance platform designed to provide instant emergency support, real-time tracking, and AI guided help using modern web technologies. Women often face unsafe situations where manual intervention—such as calling for help or sharing location—is not possible due to panic, danger, or limited accessibility. These challenges make traditional safety methods slow and unreliable. SecureHer solves this by integrating one-tap SOS alerts, live GPS tracking, audio evidence recording, and encrypted communication tools that allow trusted contacts to receive immediate updates and assist the user quickly. The system also includes an AI Safety Chatbot that provides emotional support, legal guidance, and step-by-step instructions during emergencies. The platform is built using React.js, Node.js, Firebase, Google Maps API, and cloud services that securely manage user identity, location, and alert data. Through multiple test scenarios and simulated emergency use cases, SecureHer demonstrates faster alert delivery, improved real-time monitoring, and enhanced safety support for women, families, and institutions, ensuring a more reliable and accessible protection system.***

Keywords: Women Safety, Emergency Response System, SOS Alerts, Real-Time GPS Tracking, Audio Evidence Capture, AI Safety Chatbot, Firebase, Cloud Computing, Digital Security, React.js, Node.js, Web-Based Safety Platform.

I. INTRODUCTION

The rise of digital technologies, cloud platforms, and intelligent communication systems has transformed how modern safety solutions are designed and implemented. Traditional safety mechanisms rely heavily on manual communication, delayed response, and limited situational awareness, making it difficult for individuals—especially women—to receive immediate support during emergencies. Researchers worldwide have explored the role of online safety platforms, real-time location systems, emergency alert networks, and AI-based assistance tools to enhance personal safety and reduce response time. This chapter presents a detailed review of existing research related to women's safety applications, GPS-based tracking systems, emergency alert frameworks, and AI-driven support tools. A structured overview of recent studies is included to highlight current advancements, limitations, and research gaps. These insights provide a foundation for understanding the technical, functional, and societal needs addressed by the SecureHer platform.

II. LITERATURE REVIEW

Over the past decade, several researchers have investigated digital interventions for improving personal safety, focusing on rapid alert mechanisms, location-based services, and automated evidence collection. Early safety applications were limited to basic SOS messaging or simple location sharing, lacking intelligent automation, emotional support tools, or continuous tracking. While these systems offered initial support, they still required significant user input and often failed under panic or restricted conditions.

Paper Title	Authors	Key Findings	Relevance to SecureHer	Year
Android Based Women Safety Application with Real Time Alerts and Location Tracking	Jay dip Bengare, Ravindra Jadhav, Gaurav Kapale, Rishikesh Chandan	The system enables instant SOS alerts with real-time GPS location sent via WhatsApp and SMS, demonstrating reliability and quick response.	Supports SecureHer's SOS alert feature and real-time GPS location transmission for emergencies.	2025
A Mobile Based Application for Women's Safety with GPS Tracking and Police Notification	Ester Dhenise G. Vinarao et al.	Developed a mobile safety app that sends real-time SMS notifications with GPS coordinates.	Strengthens SecureHer's future expansion into police integration and continuous location tracking.	2019
Women Security Application Using Smart Emergency Response System and Real-Time.	Jain University Researcher.	A mobile-based women security app featuring real-time assistance and continuous location support to enhance user safety.	Confirms importance of real-time tracking and usability, aligning withSecureHer's live support and alert mechanisms.	2025

Table 1: Existing System

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III. METHODOLOGY

Frontend Implementation (React.js / React Native / PWA) The SecureHer frontend is built using React.js (web) and React Native/PWA (mobile) to provide a responsive and user-friendly interface. The UI ensures that all critical safety features—especially the SOS control—are accessible within a single tap.

1. SOS & Emergency Interface
   - Prominent SOS button for instant communication
   - Auto-trigger option for voice-based SOS activation
   - Uses HTML5 Geolocation API for retrieving user location
   - Uses browser/mobile microphone API to record a 10-second emergency audio clip
2. Real-Time Location Sharing
   - Location coordinates are streamed to Firestore every few seconds
   - Location map rendered using Google Maps API
   - Update speed optimised to reduce battery usage and ensure accuracy
3. Audio Evidence Upload
   - Recorded audio is compressed on the client side
   - Uploaded securely to Firebase Storage using signed URLs devices. 15
   - Metadata stored in Firestore for dashboard retrieval
4. AI Safety Chatbot Interface
   - Chat UI built using React Hooks and asynchronous message handling
   - Prompts processed through Gemini API
   - Guides users with:
   - calm-down instructions
   - legal awareness
   - self-defence tips
   - immediate actionable steps
5. User Interface Enhancements
   - Uses React Hooks (useState, useEffect, useContext)
   - API requests handled via Axios
   - UI styled with:
   - SCSS
   - Custom colour scheme for emergency visibility
   - Responsive design for mobile-first experience

IV. CONCLUSIONS

The SecureHer project successfully demonstrates the application of modern web technologies, cloud computing, and intelligent automation to enhance personal safety for women in real-world environments. The system was designed to respond to growing concerns regarding harassment, stalking, delayed emergency response, and lack of real time safety assistance. Through its combination of SOS detection, GPS-based live tracking, automated audio evidence captures, and AI-powered safety guidance, SecureHer provides a fast, reliable, and user-friendly safety platform capable of supporting individuals in vulnerable situations. The platform integrates Firebase Authentication, Firestore, Cloud Functions, Google Maps API, and Gemini AI models to deliver seamless emergency workflows. Experimental evaluation confirmed that the system performs efficiently, triggering alerts within seconds and providing consistent accuracy in safety recommendations and threat interpretation. Key achievements of SecureHer include: • Successful development of a fully functional emergency safety platform. • Automated SOS alert generation with real-time location and audio evidence. • Integration of AI-based safety instruction parsing for context-aware emergency suggestions. • Significant reduction in user response time due to automated decision-making workflows. • Improved coordination between users and their trusted contacts through instant notification and tracking features. • User testing results showed strong satisfaction with the speed, accuracy, and reliability of the system.

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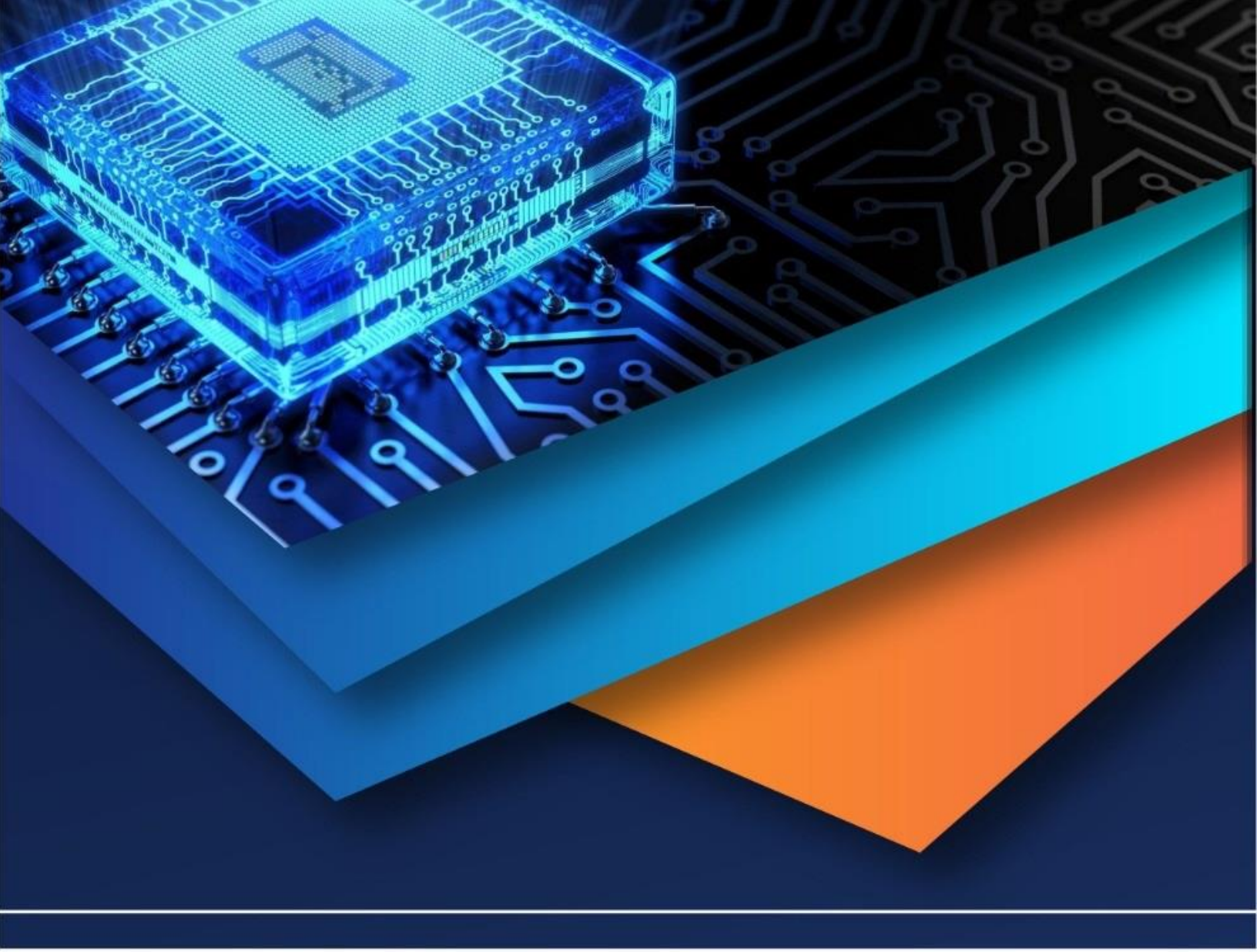
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