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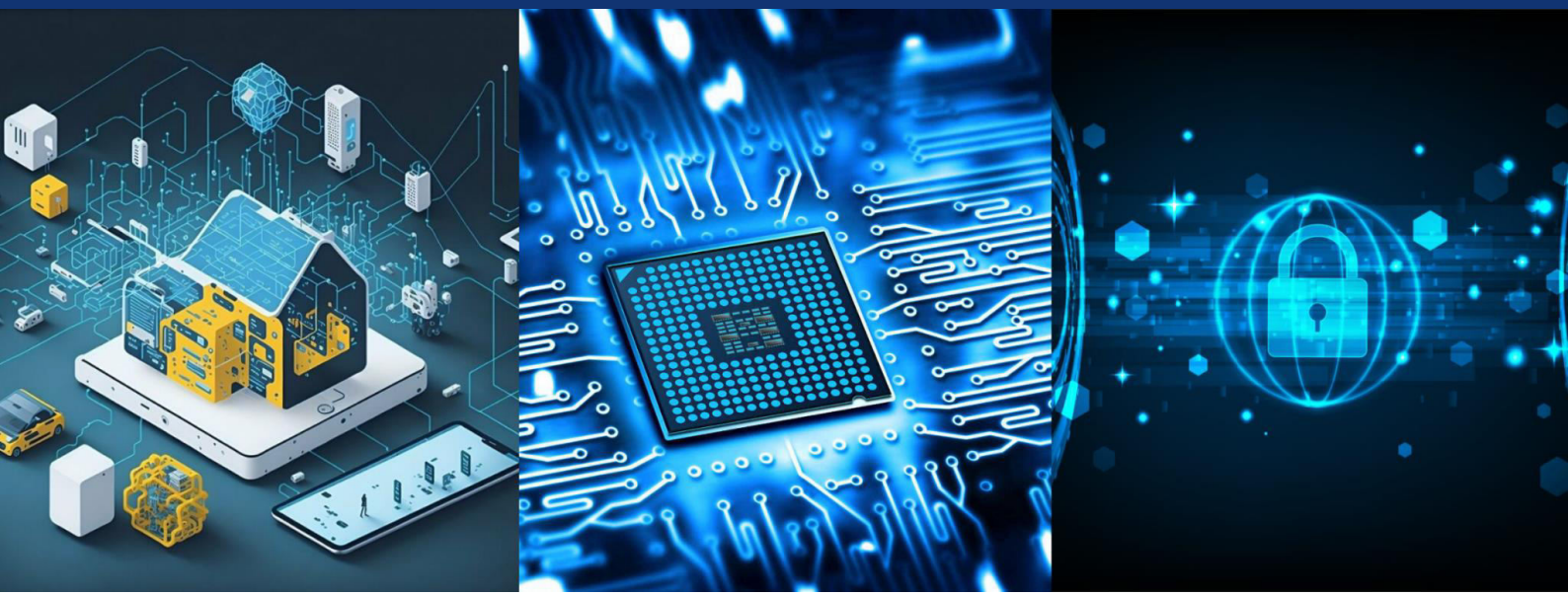

International Journal of Innovative Research in Computer and Communication Engineering

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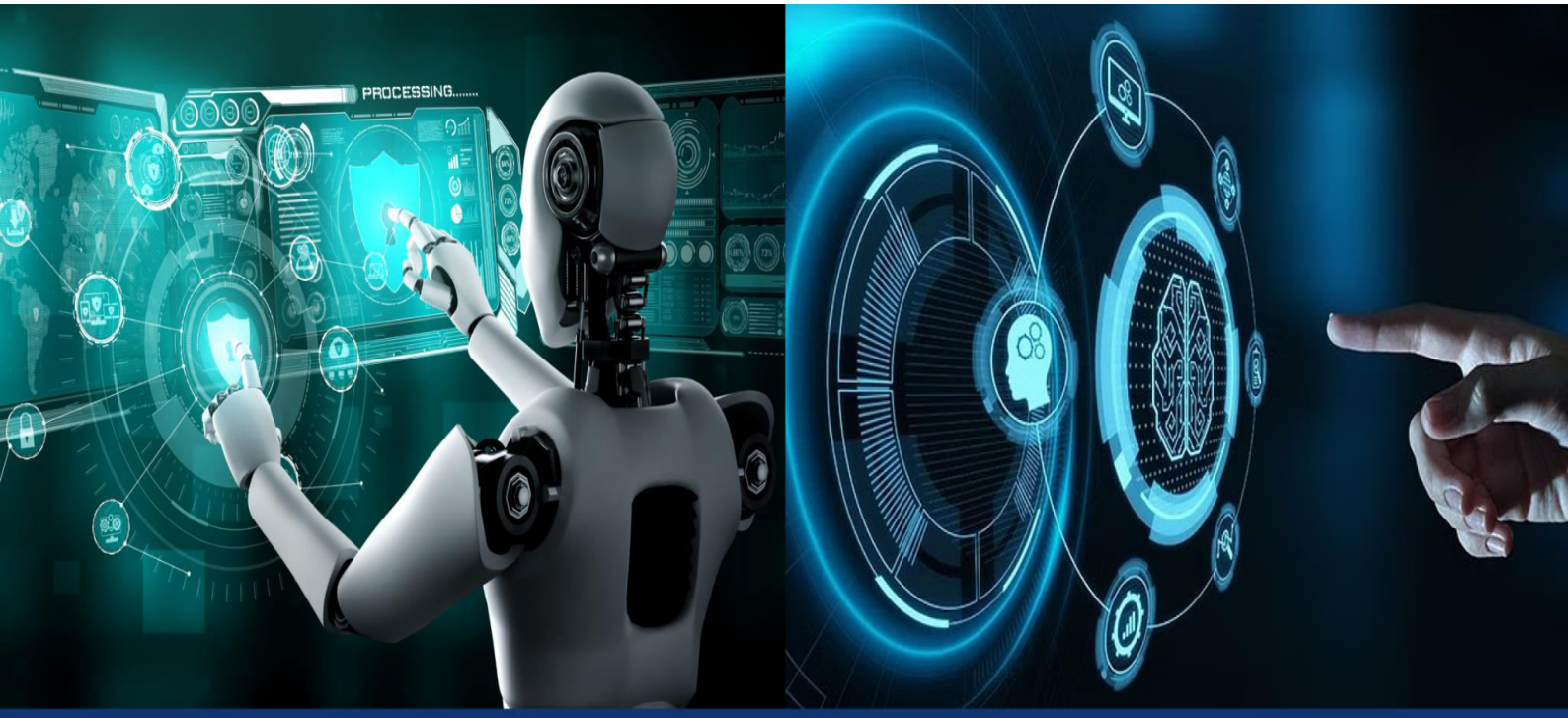

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Saviour :Women Safety Android Application

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ABSTRACT: Due to the increase in harassment and assault, women's safety is still a priority. The manual SOS activation employed by most safety apps may not be feasible in emergency situations. To bridge this gap, we developed the ingenious Android app Saviour using Kotlin in Android Studio.or safe user logon and real-time data storage, the application makes use of Firebase Authentication and Firestore. It enables users to send real-time SOS messages via SMS and WhatsApp, share live location via Google's Fused Location Provider, and include emergency contacts. In case of emergencies, users can also record brief videos, which are uploaded directly to Cloudinary for safe storage and simple sharing. When it is needed the most, the app sees to it that trusted contacts receive location and essential evidence.

KEYWORDS: Cloudinary, Emergency Contacts, Firebase, Women Safety App.

I. INTRODUCTION

Women's safety became a major global issue over the last few decades with increasing occurrences of physical assault, sexual harassment, and violent crimes being committed both in open and closed locations. In several cases, help is not forthcoming for victims owing to the fact that there has been no presence of immediate intervention or because individuals are not being able to directly activate emergency response systems. Standard safety devices, such as manual SOS devices, whistles, or alarms, fail to perform optimally in panic situations where time is of essence. This created a pressing requirement for smart safety systems that provide proactive support and reduce response time at critical phases.The accelerated expansion in the use of smartphones and improvements in cloud and mobile technologies present a chance to combat this challenge through the support of smart safety solutions. Cloud storage, real-time communication interfaces of smartphones, and sensor-driven services, coupled with mobile applications, can be the starting point for enhancing personal safety. Having this in mind, we designed and developed "Saviour", an Android application specifically designed to cater to women experiencing traumatic situations. The app is developed on Kotlin in Android Studio and provides a mix of automation, live location sharing, cloud storage of media files, and instant emergency messages.

Saviour enables users to register trusted emergency contacts and send alerts instantly through SMS and WhatsApp in times of emergency. It utilizes Firebase Authentication for secure user authentication and Google Firestore to store and update user information in real time. The application utilizes Google's Fused Location Provider API to retrieve the user's exact current location, which is then automatically sent to emergency contacts when an alert is initiated. Also, the application has a capability to capture brief video recordings via the phone's camera, which are then securely uploaded to Cloudinary, an online media storage platform. Such videos can become vital evidence and assist trusted persons or authorities to comprehend the scenario in real time.For ensuring usability, Saviour is designed with efficient runtime permission handling for accessing important features like location, camera, and messaging. This ensures that the app runs smoothly without obtrusive requests, while maintaining user privacy and adhering to Android's security principles. The app provides a seamless and uninterrupted flow in case of emergencies, enabling users to engage with minimal effort or distraction. Particular care has been taken in user interface (UI) design, such that the app is easy to use, with big, clearly identified buttons and gesture shortcuts for immediate SOS activation, even if the user is strained or mobility-impaired.The app is designed to be simple, fast, private, and reliable, such that it can be used by individuals of all age groups, irrespective of their technical expertise. Real-time instant notifications are initiated instantly through SMS and WhatsApp for redundancy and a better opportunity at message delivery. The app is capable of supporting mobile sensors such as the accelerometer and cloud infrastructure such as Firebase and Cloudinary to safely store and sync user data and multimedia media. Such infrastructure offers trusted contacts instantaneous access to the user's location and emergency media even in low-connectivity situations.

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II. RELATED WORK

Other mobile apps and the available literature have been working on women's safety with respect to real-time live location sharing, distress communication, and instant alert facilities. Patel et al. [1] were already putting GPS-based live location sharing and SMS alert facilities in practice, whereas Sharma and Kapoor [2] made use of gesture-based prompts such as shake-to-alert for direct application during emergency situations. Gupta et al. [3] recognized the importance of cloud audio and video capture to preserve evidence, whereas Rao et al. [4] extended multi-channel messaging via SMS and WhatsApp for message delivery even in low network conditions. Furthermore, Kumar and Das [5] emphasized Firebase Authentication and Firestore for secure sign-in and real-time data storage, and Singh et al. [6] focused on runtime permission handling and privacy in safety applications. Due to these enhancements, the target app Saviour boasts some revolutionary features like Google's Fused Location Provider, Firebase integration, Cloudinary video hosting, gesture-based SOS activation, and multiformat emergency warnings in real-time. The present project is an upgrade of existing systems, offering a dedicated, cloud-based, and user-friendly safety solution that ensures faster, secure, and efficient help to victimized women.

III. PROPOSED SYSTEM

The suggested system is an Android mobile app named "Saviour," which was intended to enhance the safety of women by sharing locations in real-time, sending emergency messages, and recording media. The system has a responsive and reliable mobile safety platform based on Firebase, Cloudinary, and Kotlin. The following are the installation and operational steps of the suggested system:

Step1:App Installation
The application is installed on Android Studio by cloning the GitHub repository or importing the local project directory. All the dependencies are managed through Gradle.

Step2:Firebase Setup
The Firebase project is created, and the application is registered in the Firebase console. Services used are Firebase Authentication for authentication of the user and Firestore for storing emergency contacts and user data. The google-services.json file is included in the project.

Step3:Cloudinary Integration
Cloudinary is utilized to store video evidence securely to the cloud. API keys are part of the app setup, and the SDK is launched for secure upload.

Step4:Permissions Handling
The application requests runtime permissions to SMS, location, camera, and storage. These are required for capabilities like SOS alert, live location tracking, and video recording.

Step 5: User Registration and Login
Users sign in or register with Firebase Authentication. Once logged in, they're taken to the dashboard .

Step 6: Setting Emergency Contacts
Users can set trusted contacts by adding them using the application's interface. Contacts are stored with Firestore and called upon during times of emergency messages.

Step 7: Actuating SOS by Shake Detection
The app employs a shake sensor to identify when the phone is shaken four times. Once activated, it sends an SOS SMS and WhatsApp message along with the user's location automatically to the emergency contacts.

Step 8: Real-Time Location Sharing
The app employs the Fused Location Provider API to locate and share the user's live location during emergencies.
Step 9: Video Recording and Upload
They can record short videos in distress, which would be automatically uploaded on Cloudinary. The download link would be sent to the emergency contact via WhatsApp, too.

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Step 10: Alert and Logout
The application would alert and allow users to log out after the end of the session. The users also could delete contacts or change personal information.

IV. PSEUDO CODE

Step 1: User downloads "Saviour" app onto an Android device either through APK or Play Store.
Step 2: Upon launching, the user creates an account or logs in with Firebase Authentication.
Step 3: User creates his/her profile and enters emergency contact(s), stored under Firebase Firestore.
Step 4: The app still prompts runtime permissions for Location, SMS, and Camera.
Step 5: The principal dashboard is shown with a few safety options such as SOS, Location Sharing.
Step 6: Upon shaking the phone four times, the system will be automatically switched to SOS mode.
Step 7: The current location is retrieved using Google's Fused Location Provider API.
Step 8: SOS alert is sent using SMS and WhatsApp to registered emergency contacts along with location.
Step 9: At the same time, an auto-recorded brief video is saved on Cloudinary.
Step 10: Emergency contacts are notified with the Cloudinary video link through WhatsApp.
Step 11: User can access additional features manually such as live location, safe route, sound alarm.
Step 12: Logout feature logs out the user and back to the login page.
Step 13: Complete.

V. RESULTS

Utilization of the "Saviour" Android app led to efficient and motivational results in enhancing personal security for women. Life-saving capabilities such as sharing live location through Google's Fused Location Provider, broadcasting SOS messages through SMS and WhatsApp, recording video and uploading it to Cloudinary automatically, and managing emergency numbers all performed efficiently after testing. Shake-to-activate emergency gesture triggered by shaking the device was a simple and quick means for the users to trigger alerts in case of emergencies. Secure user authentication by Firebase and smooth data handling by Firestore also contributed to keeping security and reliability intact.

VI. CONCLUSION AND FUTURE WORK

The "Saviour" Android application presents an effective and practical solution to the recurring problem of women's safety. It integrates critical features such as live location sharing, shake-to-activate SOS calls, cloud-based video recording as evidence, and fast communication using SMS and WhatsApp to ensure timely assistance in emergency situations. With secure user login and data storage powered by Firebase Authentication and Firestore, and reliable video hosting via Cloudinary, the app is designed to be secure and efficient. Its simple and intuitive design makes it easy to use, even in high-pressure situations.. In the future, updates could add AI-powered threat detection, predictive alerts for dangerous locations, and multi-language support to make it more accessible.

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