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Implementation of Smart 24x7 Women Security App W-SAFE

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Abstract: ***Physical assaults and other forms of violence against women have increased in recent years. The increasing number of women working in industries and other commercial sectors has made it necessary for them to travel at odd hours and visit remote and isolating places as part of their jobs. Defence is not the sole tactic that can be sufficient to stop this growing misuse. It is necessary to come up with a security strategy that gives women a means of safety. As a result, a more straightforward safety solution is required, one that may be triggered by merely pressing a button and that can immediately notify the victim's loved ones. Therefore, the project's main focus is on a safety system that is made for women so that they never feel helpless while facing a security threat it is specifically designed to give women protection and safety so they never feel powerless in the face of such social issues. A machine learning algorithm is used to enhance the responsiveness of an android application that records women's live whereabouts and includes voice activation, crowd space rating, emergency hotline numbers, and safe route suggestions. Giving users access to current information about locations where other people have expressed safety concerns is the goal. The program would automatically sound a warning when approaching such regions in order to increase user awareness and encourage a proactive approach to personal safety.***

Keywords: Android application, Security, Global Positioning System Trackers, Crowd space Rating, Safe route suggestion.

I. INTRODUCTİON

One of the most important issues facing society is women's security [5]. The number of crimes against women, including sexual assaults, eve teasing, and domestic abuse, is rising daily. Using a smartphone to seek assistance in matters of security can be one of the simplest options [9]. The goal of this project is to develop an Android app that will safeguard women in daily life against harm in any circumstance [3][21]. We have developed a basic Android application that includes multiple safety features that women can utilize with a few taps on the screen to quickly and easily seek assistance or to avoid and flee a dangerous situation [12][15][19]. It makes use of live location monitoring to give the user's registered contacts an easy way to get in touch with them when they're in distress [25]. Additionally, it offers safety features like emergency
helpline numbers that women can call to directly connect to emergency services for their safety, a voice recording that can assist a woman or the police with identification or situational evidence, and a siren to alert the public of any misbehavior . In order to reduce crimes against women and bring charges against those responsible, it is imperative to design an efficient system for women's safety. Globally, there has been an increase in concern about women being harassed at work and on public transportation[1]. The frequency of crimes against and the right system in place [22]. The focus is on a security system that will aid in ensuring the safety and security of women. The greatest strategy to reduce your chances of falling victim to violent crimes(such as rape, robbery, sexual assault, or domestic abuse) is to identify danger, take protective action, and seek out supports to get you out of dangerous situations [13]. This gadget will watch over you, lower your risk, and provide aid when needed if you find yourself in a difficult situation or become separated from your pals on a night out and are unable to find your way home [11]. Many apps lower the risk of sexual assault on women by sending an SMS to the control center and their associates. However, this apparatus has a much more effective way of informing these respected individuals and also has a defense system that is not available in other apps [17].

II. METHODOLOGY

Android Application: The application's basic approach entails requiring the user to log in. The home screen consists of icons of adding contacts for emergency, SOS contacts, the audio links, helpline numbers, SOS button. It is simultaneously displayed on the application. This program improves the security feature by utilizing contacts, SMS, and GPS services. The Android SDK is used in the building of the application because it is incredibly user- friendly and effective for programmers as well as developers. When women find themselves in an unpleasant situation, the current method requires them to manually dial the emergency contacts from their cell phones.

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We are developing this system with SQLite and Android. We have a more streamlined and secure online application because Android is our front-end.It has a more approachable and intuitive appearanceand feel. The area's safety for navigation is indicatedby the crowd space rating. It creates the representation using datasets gathered from earlier episodes. When the user finds herself in an unfavorable position, she can push the panic button on the designed app. The existing procedure forces women to manually dial the emergency contacts from their cell phones when they find themselves in an uncomfortable circumstance.

We are utilizing Android and SQLite to construct this system. With Android as our front-end, we have a more streamlined and secure web application. It appears and feels more approachable and natural. The crowd space grade indicates how safe the place is to navigate. It uses datasets collected from previous episodes to generate the representation. The user of the created software can press the panic button if she finds herself in an uncomfortable situation. Datasets compiled from previous episodes are used to generate the representation. The created software has a panic button that the user can press if she finds herself in an unfavorable circumstanes.

Architecture and data flow diagram of the application.

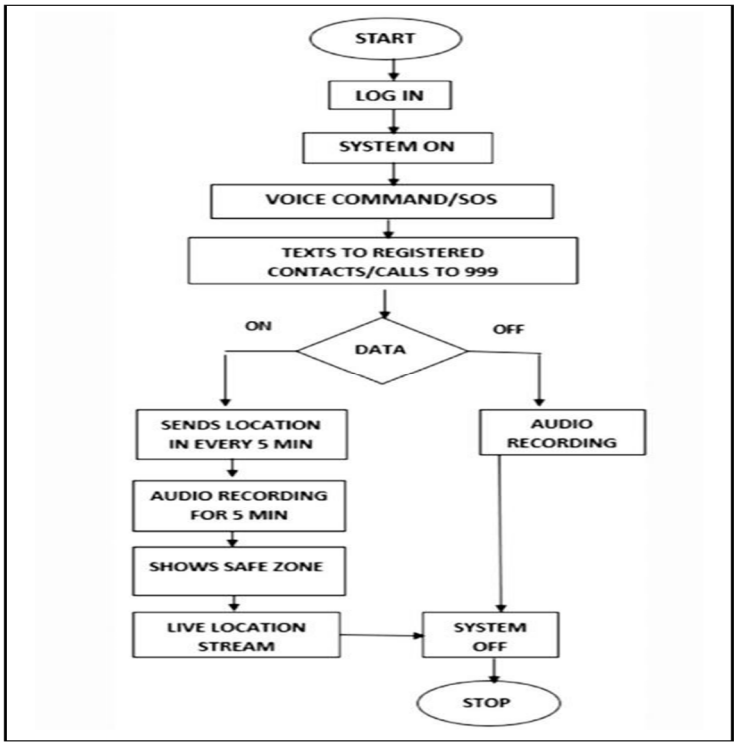


Fig. 2.1 Architecture of App

III.GAPS IDENTIFIED IN EXISTING SYSTEM

The fundamental issue with the way the policehandles these situations is that they can't always react quickly to cries for help. These restrictions include the victim's inability to contact the police discreetly and withconfidence, as well as their ignorance of the crime's location. An application for smartphones that offers women a dependable means of contacting the police in an emergencywould help to eliminate these bans. Since most people now take cell phones with them everywhere they go, the goal of this initiative was to use smartphones to create a secure atmosphere. The user's location and thephone numbers of a pre-selected list ofemergency contacts are included in a message that is instantly forwarded to the police. The application, its creation, and its technological implementation are all covered on this page. The current system has a number of issues. There is no safety device to shield females frommisbehaving activities and no monitoringsystem in place for them, which should causethem a lot of troubles. Furthermore, the girl'ssafety is not monitored by any alarmmechanism in the current system; all operationsmust be completed manually.

Negative aspects

1) Since all of the current systems depend on theGPRS service to function, they cannot be utilized in an emergency if internet access is unavailable. Why There isn't a portable concealed camera detector to protect ourprivacy. The monitoring was tiresome

2) Error in the arrival rate.

IV.LITERATURE SURVEY

Table 6.1: Related work and Research

Title	Name ofthe Author	Merits	Loss
Fems-App [2022]	Shubham Niikam	Survey offersinsightful information.	Due to thetiny samplesize, not all Indian womenare repre-sented init.
Womensafety [2019]	Pragna BR	The studyprovides informative data on theempower-mentof women.	The study'sfindings may not be fullyrepresentative of women dueto the lim-ited sample size.
We-safe[2021]	Abhishek Chaudhary	A helpfulsynopsis ofthe situation with women'ssafety applications isprovided bythe re-port.	This study does not evaluate thewomen's safety apps'efficacy.
WomenSecurity[2022]	R.M Thadi	The study suggests thatwomen's safety literacytraining initiatives might beeffective.	This researchdoes not lookat the womensafety literacytraining program's long-term consequences.
Women- safety App [2022]	E. Sankar	The reportprovides useful ad-viceon how topromote women's safety literacyon socialmedia.	The researchdoesn't look atthe challengesof encour-aging women's safety literacyon social media.
Women Safety andAlert System[2021]	BhagwatS.	Survey provides meaningful data on AlertSecurity Systems.	Not allIndian women Included in small sample size.
Lifecraft:anandroid based applicationfor women [2019]	S.N.Nur	The report offers useful information about women's empowerment.	Results could notbe entirely typical ofwoman.
Abhaya[2015]	Thota B.	The paperoffers a useful overview ofthe state ofwomen's safety apps.	Womensafety literacytraining are notexaminedin this study.
WomenSafety AndroidApp [2018]	Paras D.	Initiatives toteach womeninsafety literacy maybe successful,accord-ing to the study.	The efficiencyof thesystem isnot as-sessed in study.
WoSApp[2015]	S.Parikh	The paperoffers helpfulguidance on how to increasewomen's social mediasafety literacy	Problemin floatingliteracy programson socialmedia notcovered.

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V. PROPOSED SYSTEM

Our mission is to enable women to feel safe and secure wherever they go by developing an app specifically for their protection. Users of our app will have immediate access to features such as emergency warnings, resources for potentially dangerous circumstances, and location sharing withtrusted contacts. You may feel secure wherever yougo with it in your pocket, almost like having apersonal safety buddy.

The following goal(s) is/are intended to be achievedby the proposed work:

1) The program has an intuitive user interface that lets the user customize settings including emergencycontacts and sensitivity levels.
2) The app might lessen the chance of injury and offer prompt support in case of unanticipated circumstances.
3) Users can promptly provide their position information and distress signals to pre-selected contacts or authorities.
4) To assist users in times of need, the program includes emergency hotline numbers.
5) In addition, the program has an emergency SOS contacts function that helps users get in touch with their most reliable contacts.
6) In the end, The application is an integration of Android and Machine Learning Techniques which will make the initiated idea more responsive therebycatering to all the needs of a user to feel safe and heard.

The application combines Android and machine learning techniques to improve the idea's responsiveness and meet all of the user's needs for feeling heard and safe. It becomes more responsive and engaging with the use of machine learning algorithms. The ladies will be able to select the appropriate pathways with the aid of real-time live tracking and crowd sourced safety ratings. The application will be placed on the Play Store, allowing users to quickly and easily download it andhave a portable form of protection with them at all times. Additionally, the programme will indicate locations with a high risk level and a different, moreadvantageous route for users to take.

Use the offline mode with cached data to ensure that essential safety elements are still accessible even in locations with sporadic network connection. Provide consumers the option to access essential information and emergency capabilities from their device without requiring an internet connection by offering an offline mode. Important data is kept locally in this mode. By including these elements, the Women Safety Android application may offer a comprehensive and proactive approach to user safety, equipping users with the knowledge and tools they need to properly navigate their surroundings and react to any threats. Performance of the application can be constantly improved by Code Optimization, Asynchronous Operations, Image Data Compression , Memory Optimization , UI Optimization , Testing and Profiling . Readability can be achieved by Consistent Typography, White Space and Layout , Iconography ,Clear Navigation , Colour Scheme , Readable text size and Feedback and confirmation from end users.

VI. GAPS COVERED WITH OUR TECHNOLOGY

1) Voice Activation: Using an alert via voice command.
2) Tracking a location in real time. letting users notify their SOS contacts of their current position inreal time.
3) A suggested safe way. In general, the programmewill offer users a secure route to travel, particularly in the evenings.
4) Rating of crowdsourced safety. Crowdsourcing isone method used to record the degree of safety in a particular situation. For example, the well-known Safetipin platform gathers user annotations on safetyperceptions and other variables on nearby streets.

The Women Safety Android application prioritizes security, which is accomplished through a multipronged approach that encompasses encryption, secure communication protocols, and authentication. User data saved in the Room DB is safeguarded using industry-standard encryption mechanisms, ensuring that personal information remains confidential even in the unlikely case that unauthorized access is attempted. Furthermore, the application verifies users' identities before granting access to their personal data by utilizing robust authentication techniques such secure user authentication and authorization protocols. This protects unwanted users from accessing vital data and enhances the application's overall security posture.

In terms of communication security, the Women Safety app ensures safe data transmission between the user's smartphone and any external servers or emergency services. This is achieved by using secure communication protocols, such as HTTPS, to encrypt the data as it is being transmitted. The integrity and confidentiality of user communications are preserved by this encryption, which guards against potential eavesdropping and man-in-the-middle assaults. These comprehensive security methods are used by the Women Safety Android application to provide users with piece of mind that their chats and personal information are safe from potential security concerns, in addition to an intuitive user experience.

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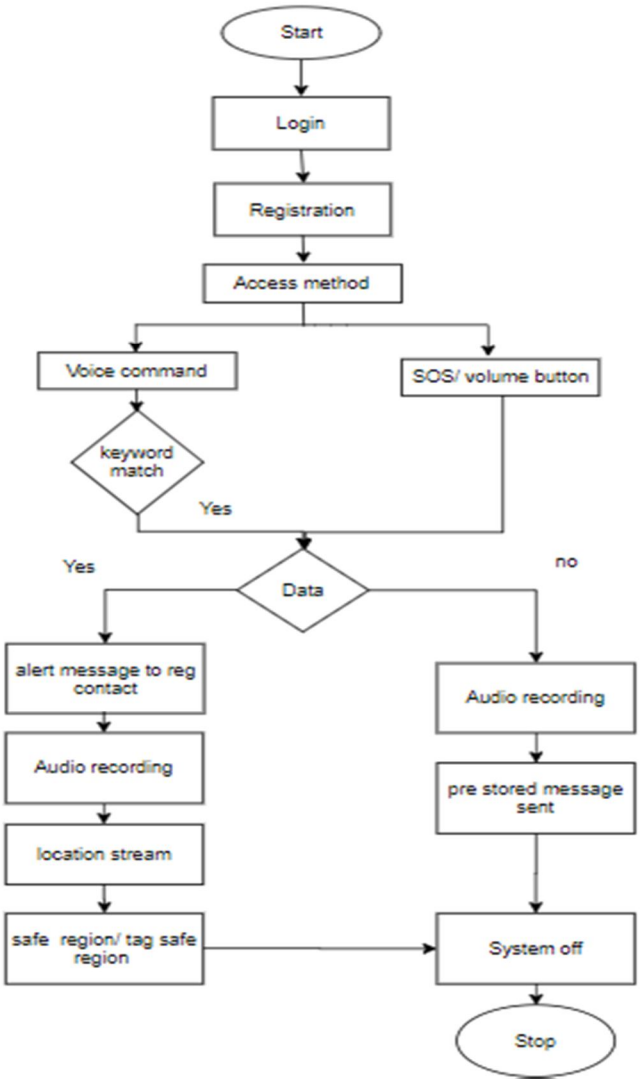


Fig6.1: Control Flow Diagram of the application

The app uses a combination of machine learning and Android technologies to enhance the idea's responsiveness and satisfy every user's demand to feel secure and heard. Using machine learning techniques makes it more engaging and responsive. With the use of crowdsourced safety ratings and real-time live tracking, the ladies will be able to choose the right pathways. The application will be made available on the Play Store, making it simple and quick for consumers to download and carry around a portable security solution at all times. The programme will also suggest locations with a high danger rating and an alternative, better route for users to travel.

VII. RESULTS AND SCREENSHOTS OF THE APPLICATION

Enhanced Safety: Women's safety apps greatly improve personal safety by offering real-timetracking and quick access to assistance.
Empowerment: By enabling women to move through environments on their own, these apps increase their self-assurance and independence.
Community Support: These apps' strong feeling of community provides priceless emotional support aswell as aid when needed.
Data Insights: By helping authorities gather information on safety issues and high-crime regions, women's safety applications can help improve security and facilitate more efficient urban planning the precise moment the alert was raised (with a map link). The state of phone's battery. It designates a specific area or locale as a DANGERZONE based on the frequency of shakes there. Location activation is prompted automatically.

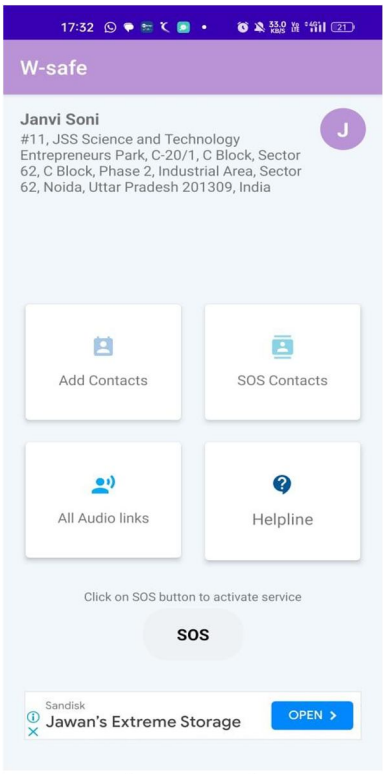


Fig 7.1: The Home Page of the Application

The Home Page comprises name of the user , address of the user and icons for further use.



Fig 7.2: The Live location links sent to the SOS contacts saved on user's phone .Basically sent as a location on the google map for easy tracking.

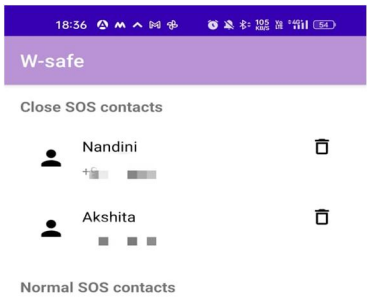


Fig 7.3: Emergency SOS Contacts saved by user

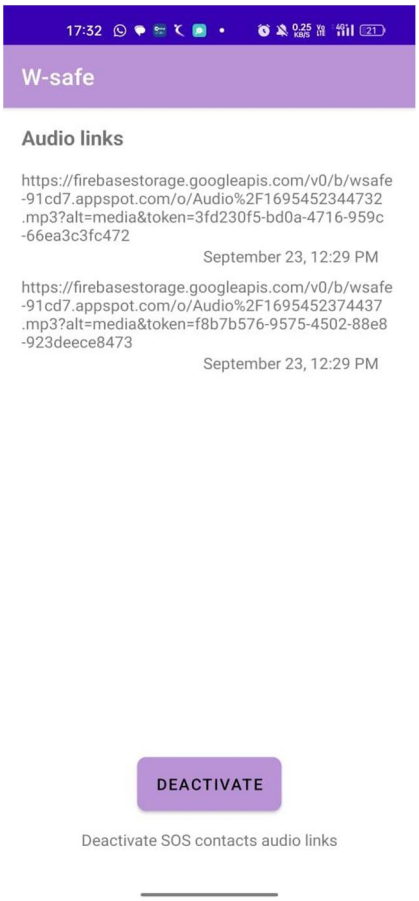


Fig 7.4: Audio Voice Alert Can be sent to SOS Contacts , Pre Recorded Audios and Live Audios can be sent to the Emergency Contacts and also to the helpline numbers.

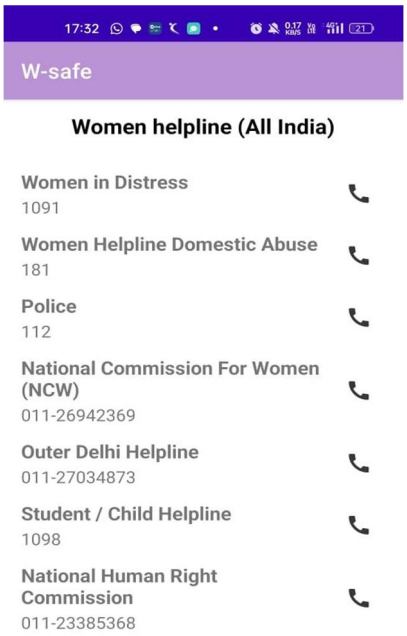


Fig 7.5: Women Helpline Numbers

VIII. CONCLUSION

A survey indicates that 53% of working women in India don't feel secure or safe. In order to lower thisrate, significantly impact society, give women asense of security and safety, and shield them from allcrimes, we are developing this application and wantto implement it widely. Ensuring the safety andsecurity of women is a crucial first step towards achieving gender equality. We will first begin with metropolitan areas in India , then expand to include the entire nation before moving onto other countries. And over time, we'll keep improving our application. Additionally, as our userbase grows, we may apply machine learning and other techniques to improve the accuracy and usability of our machine for our users. Although theprogram may be designed with women's security in mind, men can also use it to defend themselves whenleaving an unsafe environment.

We suggested creating and implementing an application-based women's safety system. The objectives were effectively met by building a location tracking subsystem, and the relevant findings were provided.

The future scope will guide the system's expansion in order to achieve the specified objectives. In conclusion, our software gives women in society a safe and secure atmosphere that enables them to work late into the night. The number of crimes against women will decline, and anyone consideringcommitting one will be deterred. This app, which can be used on any Android smartphone, will protectwomen's safety and security by acting as a weapon.

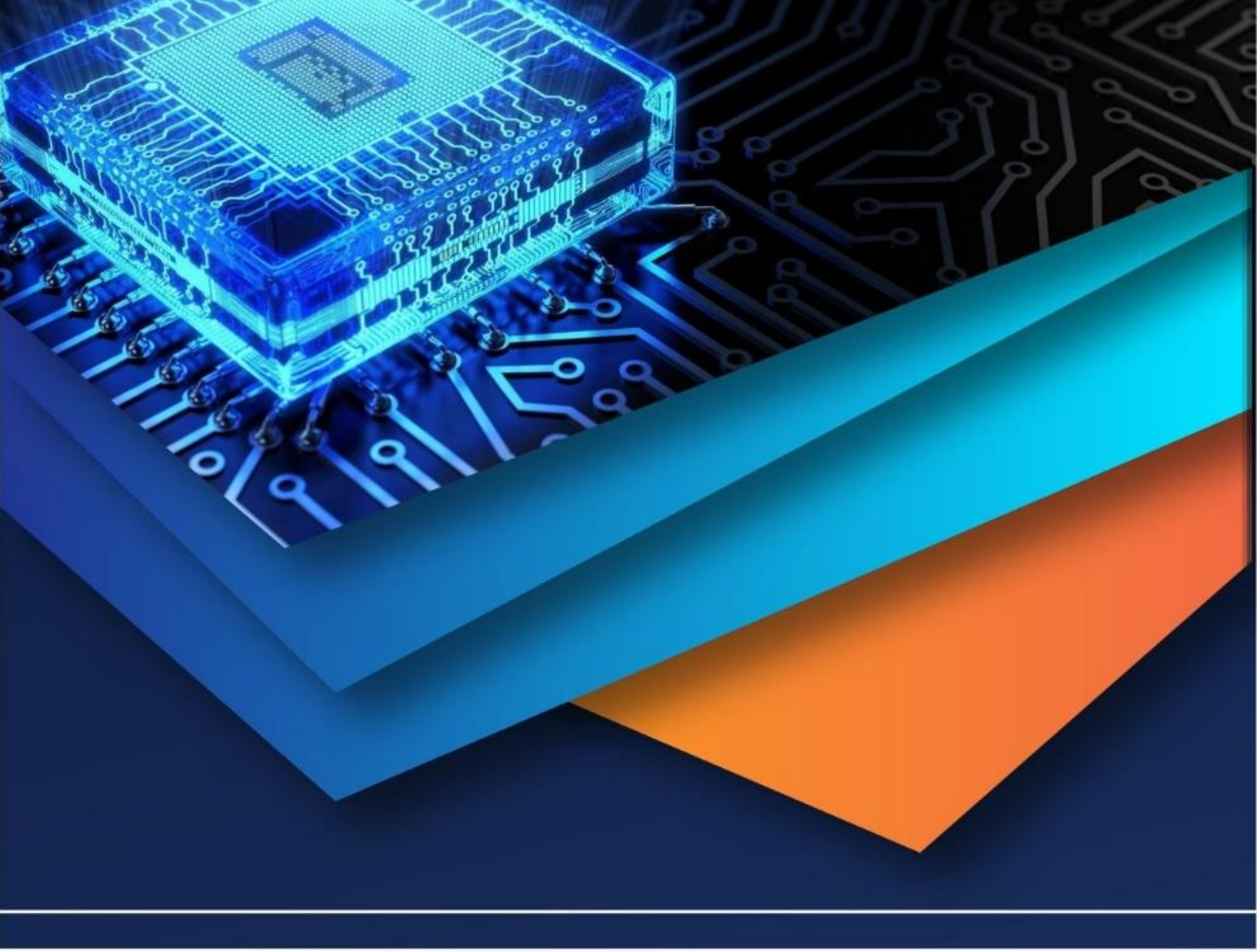
By using our software, customers can have a convenient safety gadget that fits in their pocket and functions well.

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