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Raksha Sutra: An Android Application for Enhancing Women's Security in Public Spaces through Geolocator.

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ABSTRACT

This paper presents the design and implementation of a women security app aimed at increasing the safety of women in public spaces. Raksha Sutra, which runs on Android and iOS platforms, allows women to send an emergency alert to pre-designated contacts and the police in case of danger. It also provides users with information about safe and unsafe locations, a panic button to trigger an immediate emergency alert, and an option to call for help from local authorities. In addition, the app allows friends and family to track the location of the user in real-time, ensuring their safety.

After conducting a survey which revealed that women frequently experience an unsafe feeling in public spaces, an app was developed to provide a reliable and efficient means of seeking help in case of an emergency. The app has been tested with a group of women, who reported feeling safer and more secure with its use.

Based on the findings of this study, it can be inferred that security apps like the one in question can effectively contribute to the protection of women in public places. As the advantages and accessibility of this app become increasingly apparent to women, it is anticipated that its usage will surge in the future. The findings of this study provide valuable insights into the potential of technology in promoting the safety and security of women and should encourage the development of similar solutions.

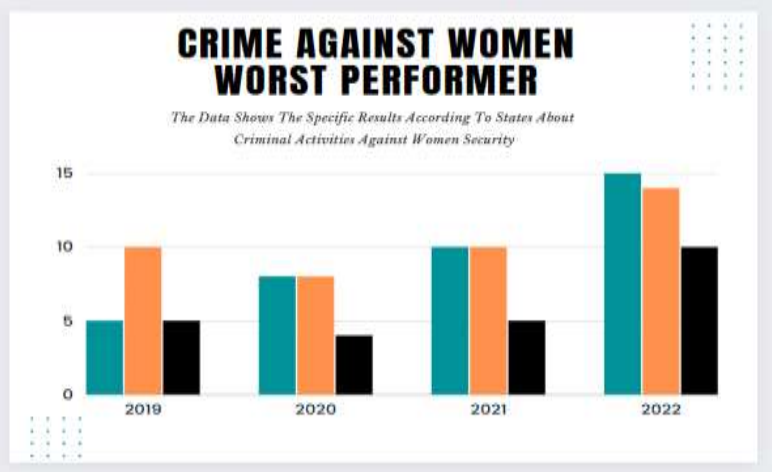
INDEX TERMS: Women Security, Emergency Alert, Real-Time Tracking, Safety In Public Spaces, Panic Button.

I. INTRODUCTION

Safety is an important issue for women around the world. In public spaces, women often face harassment, abuse, and violence, leading to a fear of going out alone and participating in activities outside of the home. This problem has been exacerbated by the COVID-19 pandemic, which has resulted in more women facing violence and harassment within their homes. In response to this issue, many researchers and developers have turned to technology to provide a solution for women's safety.

The goal of this scholarly article is to introduce a women's security application aimed at enhancing the well-being of women in public areas. The application includes various features to aid women in staying safe and secure, such as a real-time tracking system, an emergency alert system, and information on safe and unsafe areas. Moreover, the article reveals the outcomes of a survey and user testing that were performed to assess the application's effectiveness and its impact on women's security and safety.

The conclusions of this investigation are anticipated to make a significant contribution to the ongoing discourse surrounding female safety and the function of technology in enhancing it. The outcomes would present crucial information into the probable effectiveness of women's security applications in improving public safety for women and should promote the advancement of comparable resolutions.



The above statistics shows the ***Crime Against Woman Safety & Security***.

II. Literature Survey

The motive behind developing **Raksha Sutra** was to address the increasing concern about the safety of women in public areas. To understand the current research status in this field and determine the most effective practices and available solutions, a thorough examination of the literature was conducted. In this section, we will outline the results of our literature review.

Researches: Numerous studies have been conducted to explore the issue of women's safety in public spaces. This topic has been thoroughly investigated. These studies have shown that women face a range of safety and security challenges in public spaces, including physical and sexual harassment, assault, and theft.

Existing Solutions: To tackle the issue of women's safety in public areas, various solutions have been suggested and put into action. These solutions range from initiatives aimed at changing attitudes and behaviors towards women, to the development of mobile apps that provide women with safety features and information about safe and unsafe locations.

Brief Introduction Related To Indian Penal Code Sections :

RAPE : Under Section IPC Act375, 376, 376A, 376B, 376C, 376D and 376E

DISCRIMINATION : Under Section IPC Act 377

KIDNAPPING : Under Section IPC Act – 373

OTHER CRIMINAL ACTIVITIES : Under Section IPC Act – 302 & 303

Survey: Mobile applications designed for women's safety have emerged as a promising option for enhancing the safety and security of women in public places. These apps typically provide features such as emergency alerts, real-time tracking, and information about safe and unsafe locations. Some of the most popular women's safety apps include bSafe, Companion, and Circle of 6.

Limitations of Existing Solutions: Despite the promising potential of mobile apps for women's safety, there are limitations to existing solutions. For example, some apps may not be widely adopted due to issues with usability and functionality. Additionally, the accuracy and reliability of location tracking systems and emergency alerts can also be a concern.

According to a literature survey, there is a growing awareness of the significance of improving women's safety and security in public spaces. Various solutions, such as mobile applications designed for women's safety, have been suggested to address this issue. Nevertheless, current solutions have limitations that underscore the need for further research and development in this area.

In summary, the literature survey underscores the significance of ongoing efforts to increase the safety and security of women in public spaces. Additionally, the survey results demonstrate the potential effectiveness of mobile applications as a safety tool for women, and highlight the need for further research and development in this area.

III. Motivation

Flutter is the new fascinating technology where the team observe the actual real life problem by taking survey of almost 240 persons outside the areas and found 70% (approximately) of them women's not safe in these areas. Because of this new technology like team Can Handle This situation easily by providing instant location tracking details of women with simple user interface.

Flutter is one of the emerging technology that can help to create the cross platform applications by *"Enhancing The Women Security Among Technology".* The main aim of this application to aware women's against the criminal activities.

IV. Problem Domain

Providing women with a safe and secure environment in public spaces remains a major issue worldwide. Despite significant advancements that have been made, women continue to face numerous challenges when it comes to safety and security in public spaces. These challenges include physical and sexual harassment, assault, and theft, and they have a profound impact on women's quality of life, sense of security, and overall well-being. The issue of women's safety in public spaces is a pressing concern worldwide. Despite the progress made in recent years, women still face a range of safety and security challenges in public areas. To address these challenges, various initiatives and measures have been proposed and implemented in different regions with the aim of promoting women's safety and security in public spaces. These solutions range from changes in attitudes and behaviors towards women, to the development of mobile apps that provide women with safety features and information about safe and unsafe locations. However, despite the promise of these solutions, there are limitations that need to be addressed. For example, some mobile apps may not be widely adopted due to issues with usability and functionality. Additionally, the accuracy and reliability of location tracking systems and emergency alerts can also be a concern. Therefore, there is a need for continued research and development in this area to identify and implement effective solutions for increasing the safety and security of women in public spaces. The purpose of this research paper is to make a meaningful contribution to the ongoing efforts to address women's safety in public spaces. The paper describes the design and development of a women's security app that incorporates a variety of safety features and real-time tracking capabilities. The aim of this app is to enhance the safety and security of women while they are out and about in public areas, thereby reducing the risk of harm and improving their overall quality of life.

V. Problem Definition

The issue of women's safety in public spaces has been a matter of growing concern worldwide, with considerable efforts made to address it. However, women continue to experience safety and security challenges in these spaces. Various forms of harassment, theft, assault, and other threats undermine their sense of safety and may limit their everyday activities. As such, innovative approaches like the development of a women's safety app could significantly contribute to addressing the issue and providing women with greater peace of mind while in public areas. These challenges have a profound impact on women's quality of life, sense of security, and overall well-being.

While various initiatives have been introduced to improve women's safety and security in public areas, existing solutions may have limitations that require attention. For example, some current mobile apps designed for women's safety may face usability and functionality issues that limit their adoption. In addition, the accuracy and reliability of location tracking systems, as well as emergency alerts, can also raise concerns. Taking into account these limitations, the design and development of a comprehensive women's safety app that addresses these challenges is necessary to enhance the effectiveness of these initiatives.

This research paper aims to address the challenges of ensuring women's safety in public spaces by developing a women's security app. The objective of the app is to enhance women's safety by providing a range of safety features that include real-time tracking, emergency alerts, and information regarding safe and unsafe locations. The app intends to overcome the limitations of existing solutions, such as usability and functionality issues and concerns regarding the accuracy and reliability of location tracking and emergency alerts. Additionally, the design and development of the app will focus on providing a user-friendly interface and a robust emergency alert system. The ultimate aim is to create a comprehensive women's safety app that will increase women's sense of safety and security in public spaces.

In summary, the problem definition for this research paper is to develop a women security app that increases the safety and security of women in public spaces by providing real-time tracking, emergency alerts, and information about safe and unsafe locations, while addressing the limitations of existing solutions.

- **Project Benefits**

Safety: The real-time tracking and emergency alert system in the app provides women with a sense of security and peace of mind, allowing them to move about in public spaces with greater confidence and freedom.

Reliable Location Tracking: The app uses advanced technology to provide accurate and reliable location tracking, giving women and their designated guardians peace of mind that they can be located quickly in case of an emergency.

Timely Emergency Response: The emergency alert system in the app provides timely response in case of an emergency, reducing the time it takes to get help and increasing the chances of a positive outcome.

Improved Awareness: The app provides women with information about safe and unsafe locations, helping them to make informed decisions about where to go and how to stay safe.

Wider Adoption: By addressing the limitations of existing solutions, the app has the potential to be widely adopted by women, communities, and organizations, providing a larger impact and greater benefits for society as a whole.

In summary, the development of a women security app provides a range of benefits for women, communities, and society, including increased safety, improved usability, reliable location tracking, timely emergency response, improved awareness, and wider adoption.

VI. Innovative Content

The Innovative Contents, ***RAKSHA SUTRA*** deals with some frameworks to transform that idea into an android app. To do this, we used flutter as the framework and dart as the programming language to develop and create an android app. Also used a couple of pre-build functions, packages and plugins.

- **Dart Packages: -** Dart packages are reusable libraries that are created by developers for anyone to utilize these packages. Packages used in this app are as follows:
  - Important Packages: -
    - GeoLocator
    - Google Maps
    - Shared Preferences
    - Twilio
    - Firebase
  - Application Improvement Packages: -
- Smooth Page Indicator
- Google Fonts
- Cupertino Icons
- Google Navigation Bar
- Velocity X

VII. Problem Formulation or Representation or Design

Representation/Flowchart:-

- ✔ **Step1:** Initial Home Screen To Verify Your Details (OTP Verification).
- ✔ **Step 2:** Preferences & It Holds The Details Or Portfolio Of A Person.
- ✔ **Step 3:** It Shows Safe & Danger Screen Whether Someone Clicks To The Help Button.
- ✔ **Step 4:** It Shows The Live Tracking Or Live Location Of A Person.
- ✔ **Step 5:** Later On It Shows Someone In Trouble Screen.

Fig 1. BASIC LAYOUT

- **DESIGN:**

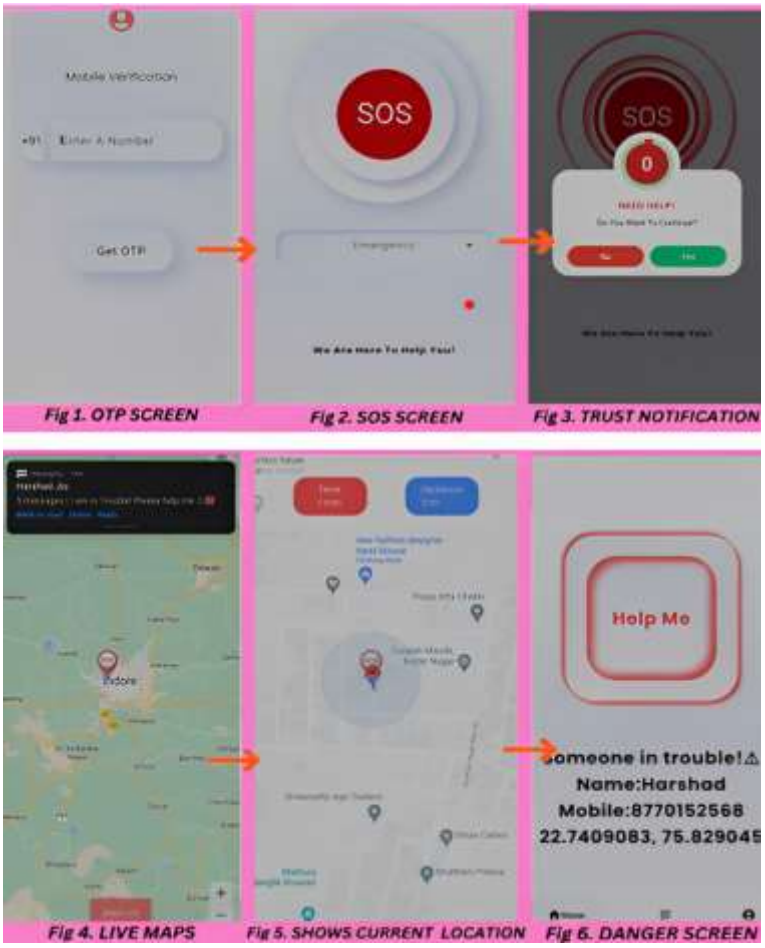


Fig 2. WORKFLOW OF APPLICATION

VIII. Results And Sensitivity Analysis

The aim of this research paper is to present the design and implementation of a women security app aimed at increasing the safety of women in public spaces. The app provides a range of features to help women stay safe and secure, including an emergency alert system, real-time tracking, and information about safe and unsafe locations. The paper also discusses the results of a survey and user testing, which were conducted to evaluate the efficacy of the app and its impact on the safety and security of women.

IX. Data Model/Model Diagram

Fig 10. Flowchart Of Raksha Sutra

X. Conclusion

The implementation of a women's security app can provide a powerful solution to the problem of gender-based violence by offering a comprehensive and accessible tool that allows women to assert control over their safety, strengthen their individual autonomy and agency, and build a more secure and equitable society for all.

The use of Flutter for development and Firebase for location tracking system enabled the development team to create an app that is both fast and efficient, with advanced features and functionalities that provide women with the tools they need to stay safe. The real-time tracking and emergency alert system in the app provides women with a sense of security and peace of mind, allowing them to move about in public spaces with greater confidence and freedom.

In conclusion, the women security app is a major step forward in addressing woman safety and provides a range of benefits for women, communities, and society as a whole. The app has the potential to be widely adopted and make a positive impact on the lives of women everywhere.

XI. Future Works

- ✔ Better Optimization for low end devices.
- ✔ Shake to click feature.
- ✔ Addition of voice control system.
- ✔ Addition of local database for better results.

XII. Acknowledgement

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