iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 12 **Issue:** V **Month of publication:** May 2024

DOI: https://doi.org/10.22214/ijraset.2024.62873

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 12 Issue V May 2024- Available at www.ijraset.com

NARI SURAKSHA SETU: A Women's Safety App

Shruti Mahajan[1], Shweta Khandare[2], Krishna Dubbewar[3], Kartik Patekar[4]
Artificial Intelligence and Data Science Department, Savitribai Phule Pune University

Abstract: ***Ensuring the safety and security of women has become an important issue in our society today. The Nari Suraksha Setu application is designed to help with this by providing a way for women to stay safe and get help when they need it. This report will explain what the application does and how it can make a difference in women's lives. The Nari Suraksha Setu application is a mobile app that helps women in different ways. It can be used to quickly call for help in emergencies, track a person's location in real-time, and connect them with support services. The app is easy to use and helps women get assistance fast when they are in trouble. By using technology like GPS, the app helps authorities respond quickly to emergencies and provide help when needed. In addition to emergency response, the Nari Suraksha Setu app allows users to report incidents of harassment or violence anonymously. This helps create a supportive community where women can share their experiences and work together to make public spaces safer. The app also offers important information on legal rights, support organizations, and prevention strategies to help women protect themselves. Overall, the Nari Suraksha Setu application is a step forward in promoting women's safety and empowerment in India. By combining technology and community involvement, the app has the potential to bring about positive changes and create a safer environment for women nationwide. However, more work is needed to ensure that the app is widely used, accessible to all, and sustainable in the long term. In conclusion, the Nari Suraksha Setu app is a symbol of hope in the fight for women's rights and safety. By working together, including government agencies, organizations, and technology experts, we can make the most of this innovative tool to build a society where every woman can live without fear or violence.***

Keywords: ***Nari Suraksha Setu, Women's safety, Mobile-based platform, Emergency response, Real time location tracking, Support services, PS, Geolocation, Community engagement, Crowdsourced reporting, Harassment, Violence, Solidarity, Public spaces, Legal rights, Support organizations, Preventive measures, Technology***

I. INTRODUCTION

Detailed problem definition Nari Suraksha Setu: Enhancing Women's Safety and Empowerment Ensuring the safety and security of women is crucial in today's society. The Nari Suraksha Setu application is a mobile-based platform designed to help women feel safe and empowered. It has features like emergency response, real-time location tracking, and access to support services. The app allows women to seek help quickly during distress and helps authorities respond promptly to emergencies. One key aspect of the Nari Suraksha Setu app is its user-friendly design. It enables users to report incidents anonymously and provides resources on legal rights and support services. The app also promotes community engagement by creating safer public spaces through data-driven insights. Despite its potential, the Nari Suraksha Setu app faces technical challenges like developing a reliable emergency response system and ensuring user-friendly design. It also relies on data analytics to identify high-risk areas for women's safety. Implementation hurdles related to infrastructure and stakeholder collaboration must be overcome for the app to be effective and sustainable. In conclusion, the Nari Suraksha Setu app is a promising tool for promoting women's safety and empowerment. By addressing technical challenges and fostering collaboration, we can create a safer and more inclusive society for women.

Justification of problem : Technical Challenges Associated with the Nari Suraksha Setu Application As a software developer, it's essential to provide a comprehensive justification for the technical challenges associated with the Nari Suraksha Setu application. Here's a detailed justification for the identified problems: Emergency Response System Reliability: The reliability of the emergency response system within the Nari Suraksha Setu application is crucial for ensuring women's safety. Several technical factors can compromise the system's reliability, including: GPS Signal Accuracy: Sometimes, the accuracy of GPS signals can vary due to various factors. Inaccurate location data can cause delays or misdirection in emergency response efforts. Network Connectivity: If the user's area has poor network coverage, sending distress signals or receiving help may be challenging. Device Compatibility: The application must work well on many different devices, which can make the development and testing process more complex. User Interface and Experience Design : Designing an easy-to-use interface is important for the Nari Suraksha Setu application to help users seek assistance quickly during emergencies. However, there are technical challenges such as: High-Stress Situations: During emergencies, users may feel stressed and find it hard to use the application.

©IJRASET: All Rights are Reserved

Designing an interface that is easy to use under pressure requires thinking about visual cues and navigation carefully. Device Compatibility and Accessibility: Users with different needs or disabilities must also be able to use the application. Making it accessible to everyone adds complexity to its design and development. Data-Driven Insights and Analytics: The Nari Suraksha Setu application uses data to identify trends and patterns related to women's safety. However, there are some technical challenges, such as: Data Collection Mechanisms: Collecting information like incident reports and user feedback requires planning and working with backend systems. Data Processing Algorithms: To analyse lots of data quickly, sophisticated algorithms and computer resources are needed. Infrastructure and Stakeholder Collaboration: Using and keeping the Nari Suraksha Setu application working well involves working with many different groups. There are technical challenges like: Interoperability: Making sure the application can work with existing systems needs certain protocols and solutions. Scalability: As more people use the application, it needs to handle more traffic. Designing it to grow with demand is a challenge. Security and Privacy: Protecting user data is important for trust and following rules. Keeping data safe from misuse is a challenge that requires cybersecurity skills. In conclusion, solving the technical challenges of the Nari Suraksha Setu application needs teamwork and skills in different areas. By facing these challenges with innovation and teamwork, we can make technology work for women's safety and create a fairer society. Advancing the Nari Suraksha Setu System: A Comprehensive Plan As a software developer working on enhancing the Nari Suraksha Setu system, it is crucial to propose advances, additions, or updates that leverage new technologies, improve existing features, and address user feedback. This detailed plan outlines key strategies to enhance the effectiveness and user experience of the application. Enhanced Emergency Response System: Integration with AI-powered Incident Detection: Implement machine learning algorithms to analyse distress signals and prioritize responses effectively.

Real-Time Analytics Dashboard for Authorities: Develop a dashboard for authorities to make informed decisions and coordinate response efforts efficiently. Improved User Interface and Experience: Personalized Safety Profiles: Allow users to create personalized safety profiles with relevant information for responders. Predictive Analytics for Risk Assessment: Use predictive analytics to identify potential hotspots for proactive interventions. Social Media Monitoring and Sentiment Analysis: Monitor social media for early warning signs and emerging trends related to women's safety. Community Engagement and Support: Virtual Support Groups and Counselling Services: Provide virtual support services for emotional support and guidance. Community Safety Initiatives: Partner with local organizations for safety awareness campaigns and workshops. By incorporating these advanced features and updates, the Nari Suraksha Setu system can empower women, enhance safety and security, and foster community support. • Aim and Objectives Enhancing Women's Safety with Nari Suraksha Setu Application The aim of this project is to make the Nari Suraksha Setu app more helpful for women.

We want to add new features and make it easier to use based on what users have told us. Our goal is to use technology to improve safety and support for women in different communities.

Objectives: 1. Better Emergency Response: * We will use smart algorithms to help respond faster to emergencies and manage resources better. * Authorities will have a dashboard to keep track of what's happening in real-time during emergencies. 2. Improved User Interface: * We will add voice commands and personal safety profiles for hands-free use and to give users important information quickly in emergencies. 3. Advanced Data Analysis: * Predictive models will help identify areas with a high risk of harassment or violence and allow us to act before anything happens. * Social media monitoring will help us understand public opinion on women's safety better. 4. Engaging Communities: * Support groups and counseling services will be available in the app to give emotional support and advice to users. * We will work with community groups to raise awareness about safety, offer self-defense training, and organize community patrols. 5 Making the App Accessible and Localized: * More languages will be added to make the app usable for different groups. This project aims to create a more inclusive and responsive Nari Suraksha Setu app that meets the safety needs of women from diverse backgrounds. We will work with different groups, listen to feedback, and keep making improvements to make a positive impact on women's rights and safety everywhere

II. ANALYSIS

A. Project Plan

Nari Suraksha Setu Application In this report, we will outline the detailed project plan for the development, deployment, and maintenance of the Nari Suraksha Setu application, aimed at ensuring the safety and empowerment of women in our communities.

1) *Project Initiation Phase:* * Define what the project will involve, who it will benefit, and what we aim to achieve. * Talk with important people involved in the project and figure out who will have the most influence on the project. * Make sure everyone knows their roles and what they need to do. * Write down a document that explains the project's goals, timeframe, and budget.

2) *Requirements Gathering Phase:* * Talk to the people who will be using the application to find out what they need and want. * Figure out what technology we will need to make the application work. * Write down what the application must do and what it should not do. * Create stories describing how the app will be used and who will be using it.
3) *Design and Architecture Phase:* * Plan out how the app will work and what it will look like based on what people need. * Decide how information will be stored, how it will move around, and how it will be shown. * Make drawings showing what the app screens will look like and how people will interact with them. * Choose the tools and technology needed to build the app.
4) *Development Phase:* * Build the main parts of the Nari Suraksha Setu app following the plan. * Use a way of working that allows quick progress and feedback from users. * Check the code often, test it, and combine it with other parts to make sure it all works together. * Work closely with people who will use the app to make sure it works for them.
5) *Testing and Quality Assurance Phase:* * Create plans and scripts to check if the app works correctly based on what was asked. * Test the app to make sure it does what it should do, catches problems, and works fast. * Check if the app is easy to use and can be used by everyone. * Set up ways to test the app quickly and often to find and fix issues.
6) *Deployment and Implementation Phase:* * Get everything ready to use the app by setting up the technology to run it. * Create guides and procedures to make it easy to put the app in use. * Put the Nari Suraksha Setu app where it will be used, making sure it is available without any problems. * Show people how to use the app and help them start using it.
7) *Monitoring and Maintenance Phase*: * Keep an eye on how the app is working, how much it is used, and fix any problems that come up. * Use tools to quickly update and change the app so it stays up to date. * Offer help and fix issues as needed for people using the app. * Plan and do regular checks, updates, and backups to make sure the app works well.
8) *Evaluation and Feedback Phase:* * Ask the people who use the app, other important people, and groups in the community for their thoughts on how the app works. * Look at information from users, feedback, and data to see where the app can be made better. * Make changes and updates to the app based on feedback and what was learned to keep making it better.
9) *Documentation and Knowledge Transfer Phase:* * Write down what was decided, what was built, how it was tested, and how it was set up. * Create guides and instructions to help people use the app and to fix issues. * Teach others about the app, how to care for it, and how to make it better
10) *Project Closure Phase:* * Look at what was done compared to what was planned and if things went well. * Review how the project was done and think about how it could be improved next time. * Get approval from important people and make sure everything is finished before closing the project. * Celebrate success and thank everyone involved for their hard work. By following this project plan, we can ensure the successful development, deployment, and maintenance of the Nari Suraksha Setu application, ultimately contributing to the safety and empowerment of women in our communities. Requirement analysis Requirement Analysis for Nari Suraksha Setu Application

The project team was responsible for developing the Nari Suraksha Setu application which consist of various roles, each with specific responsibilities to ensure the successful planning, development, deployment, and maintenance of the application.

a) Project Manager *
Plans, coordinates, and executes the project.
* Manages project timelines, budgets, and resources.
* Acts as the main contact for stakeholders and ensures effective team communication.

b) Technical Lead/Architect *
Leads the technical design and architecture of the application.
* Defines technical requirements and designs scalable solutions.
* Guides the development team on technical aspects.

c) Software Developers *
Implement the core features of the application.
* Write clean and efficient code following best practices.
* Collaborate with other team members to ensure code quality.

*d) UI/UX Designer **

Designs the user interface and user experience.

* Creates wireframes and prototypes for visualizing the design.
* Ensures the application is user-friendly and aligned with user needs.

*e) Quality Assurance specialist **

Develops test plans and conducts testing to identify issues.

* Works with developers to resolve bugs and ensure quality.
* Ensures the application meets quality standards.

*f) Database Administrator (DBA) **

Designs and maintains the database architecture.

* Ensures data integrity, security, and performance optimization.
* Implements backup and recovery procedures.

*g) Community Engagement Coordinator **

Engages with community organizations and stakeholders.

* Organizes awareness campaigns and training sessions.
* Supports safety initiatives and community collaborations.

*h) Documentation Specialist **

Creates and maintains documentation for the application.

* Ensures documentation is clear and comprehensive.
* Collaborates with the team to align documentation with project goals.

By establishing this team structure, we can leverage the diverse expertise and skills of team members to develop a robust and impactful Nari Suraksha Setu application that addresses the safety and security needs of women effectively.

III. DESIGN

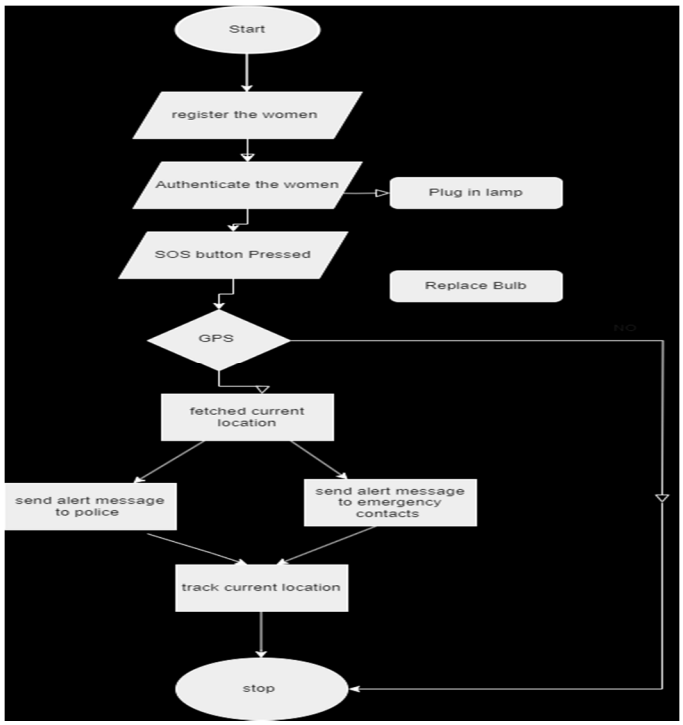


Fig no:1 flowchart

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 12 Issue V May 2024- Available at www.ijraset.com

Here is the detailed explanation for the following Algorithm for Nari Suraksha Setu Application:

A. User Registration and Authentication

Algorithm

1) User inputs registration details (e.g., email, phone number, password).
2) Validate the input fields for correctness and completeness.
3) Check if the email or phone number is already registered in the system.
4) If not registered, securely hash the password and store user details in the database.
5) Provide a confirmation message to the user upon successful registration.

Explanation: This algorithm ensures that users can securely create accounts on the Nari Suraksha Setu application, allowing them to access its features and services.

B. Emergency Distress Signal Activation:

Algorithm:

User taps the distress signal button on the home screen or uses voice command to trigger the distress signal.
Capture the user's current location using GPS technology.

1) Send a distress signal along with the location coordinates to the designated emergency response center.
2) Display a confirmation message to the user upon successful signal transmission.

Explanation: * This algorithm enables users to quickly and discreetly activate distress signals in emergency situations, notifying authorities of their location for prompt assistance.

C. Real-Time Location Tracking

Algorithm

1) Continuously monitor the user's location using GPS technology.
2) Update the user's location coordinates at regular intervals (e.g., every 30 seconds). 3
3) Compare the new location with the previous one to detect any significant changes.
4) If a significant change is detected (e.g., user moves more than 50 meters), update the location coordinates.

Explanation: * This algorithm ensures accurate and real-time tracking of the user's location, allowing emergency responders to locate and assist them effectively.

D. Access to Support Services

Algorithm:

1) Provide a searchable directory of support services within the application.
2) Allow users to search for support services based on keywords or location.
3) Display detailed information about each support service, including contact details, location, and available services.
4) Enable users to contact support services directly from the application.

Explanation

This algorithm enables users to access relevant support services, such as helplines and shelters, easily within the application, providing them with additional resources and assistance when needed. Incident Reporting:

Algorithm:

1) Allow users to report incidents of harassment or violence anonymously through the application.
2) Capture details of the incident, including location, description, and severity.
3) Provide options for users to attach photos or videos as evidence, if available.
4) Send the incident report to designated authorities or community organizations for further action.

Explanation

This algorithm empowers users to report incidents of harassment or violence discreetly, contributing to community safety efforts and facilitating timely intervention by relevant authorities.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

Community Engagement Features

Algorithm:

1) Provide features such as forums, discussion boards, and user-generated content within the application.
2) Allow users to share their experiences, seek advice, and connect with other users and community organizations.
3) Monitor user interactions and content for compliance with community guidelines and standards.
4) Facilitate moderation and administration of community engagement features to ensure a safe and supportive environment for users.

Explanation: * This algorithm fosters community engagement and collaboration among users, empowering them to support each other and contribute to creating safer communities. By implementing these algorithms within the Nari Suraksha Setu application, we can create a robust and user-friendly platform that empowers women, enhances their safety and security, and promotes community engagement and support effectively.

A. Software Used

There are two software mainly used while building the application like • Visual Studio Code • Flutter Flow Exploring the Synergy Between VS Code and Flutter Flow: A Developer's Perspective In the world of software development, having tools that make the process easier is really important.

Two tools that are getting a lot of attention lately are Visual Studio Code (VS Code) and Flutter Flow. When these two tools are used together, they make creating apps a whole lot easier. Visual Studio Code is a cool program made by Microsoft that helps developers write code.

It has lots of features that help you write code faster and better. You can use it with many different programming languages and it even has tools to help you find and fix mistakes in your code. Flutter Flow is different from VS Code because it focuses on making the design of the app look nice.

You can drag and drop pieces to create the app's look without needing to write any code. It works really well with another tool called Flutter, which helps you make apps for both Android and iOS. When you use VS Code and Flutter Flow together, you get the best of both worlds.

You can write code in one place and design the app in another, all without having to switch between different programs. This makes it faster to create apps and helps you make better-looking apps too. As technology keeps growing and changing, tools like VS Code and Flutter Flow will become even more important for developers.

By using these tools together, developers can work faster, collaborate better, and make really cool apps that push the limits of what's possible in software development.

It's an exciting time to be a developer! Programming language: Dart is the programming language which is used to develop the Nari Suraksha setu application Report on the Utilization of Dart in Developing Women's Safety Applications Dart, the programming language used in Flutter development, offers several key features and advantages that make it well- suited for developing women's safety applications like Nari Suraksha Setu.

Here are some of the ways Dart can be utilized in such applications: Cross-Platform Development Dart is the primary language used in Flutter, a cross-platform framework for building mobile, web, and desktop applications. With Dart and Flutter, developers can create a single codebase that runs on both iOS and Android devices, allowing for rapid development and deployment of women's safety applications across multiple platforms. UI Design and Prototyping Dart is used to define the UI components and behaviour of the application's user interface.

With Flutter's declarative UI framework, developers can use Dart to create visually appealing and interactive UIs that are essential for women's safety applications. Dart's hot reload feature enables developers to iterate quickly on UI designs, making it easier to prototype and refine the application's interface.

Real-Time Location Tracking Dart's support for asynchronous programming and native platform integrations makes it well suited for implementing real-time location tracking features in women's safety applications. Developers can use Dart to access device sensors, such as GPS, and fetch location data in the background, ensuring accurate and up-to-date location information for emergency distress signals and location-based services.

IV. RESULT

Following is result for the Nari Suraksha Setu application

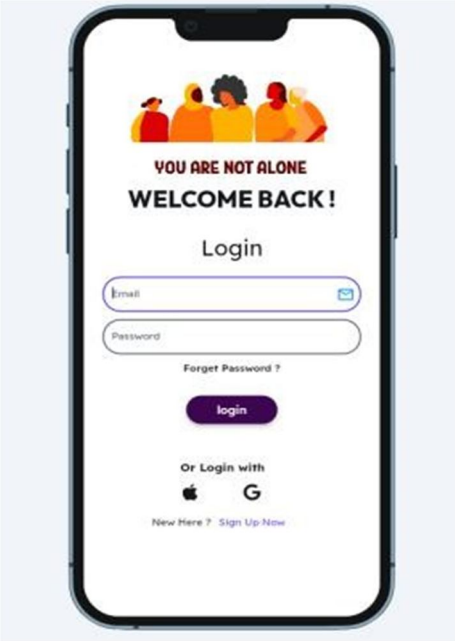


Fig no2:loginpage

This is the first page where there are various components like an image, button text field, this page is used to login in the application and also we can log in using apple or Gmail.



Fig no3: Homepage

This page is the home page where there are various options like Awareness, AI chatbot, Emergency, Safety, SOS button, Map, Emergency, profile



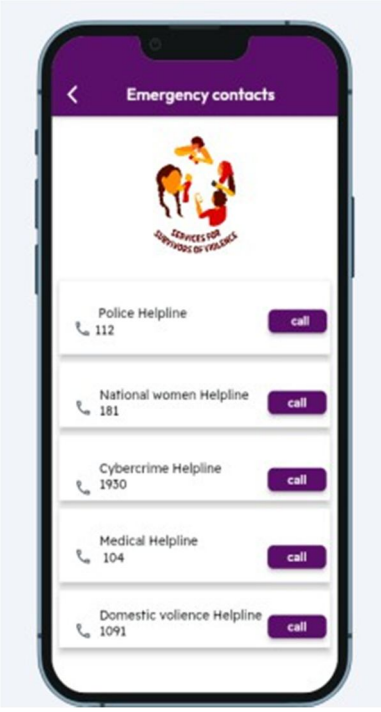
Figno:4 awareness doc

This is the page which has the awareness document which helps in being aware in stressful situation and will also educate to face such situations.



Figno:4 chtbot

This page is the gemini Chatbot which helps in assisting the girl in distress.



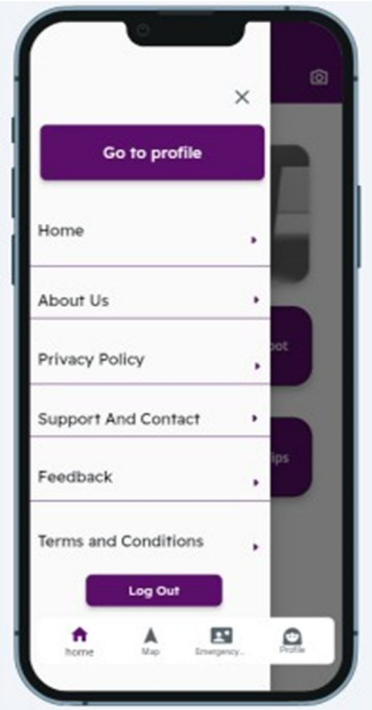
Figno:5

There are various numbers like police helpline number, National Women helpline number, cybercrime helpline, medical helpline, Domestic Violence helpline.



Figno:6

This page suggests safety tips to the women in order to be alert and to be safe



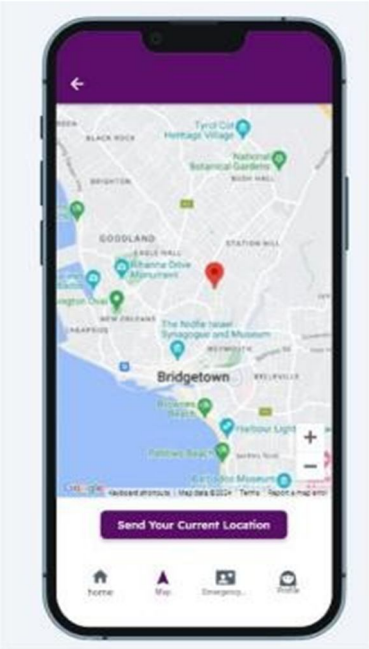
Figno:7

This is the page which helps to navigate to pages like home about us, Privacy Policy, Support and contact, Feedback, Terms and Conditions.



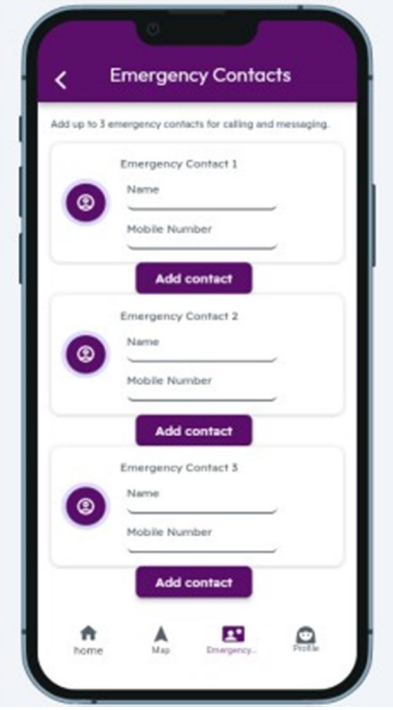
Figno:8

The page about us tells about the application that what exactly it does.



Figno:9

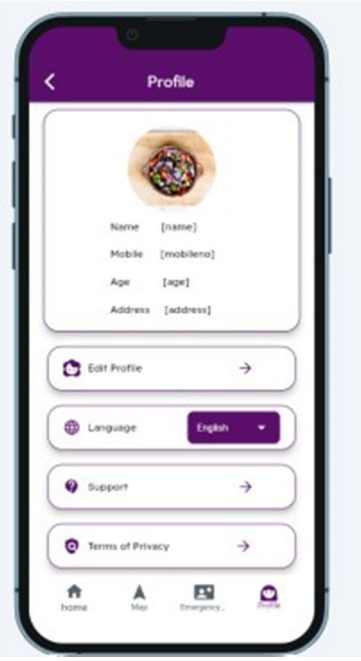
This is the map page which will track the current location and will be sent to the emergency contacts inorder to save the girl.



Figno:10

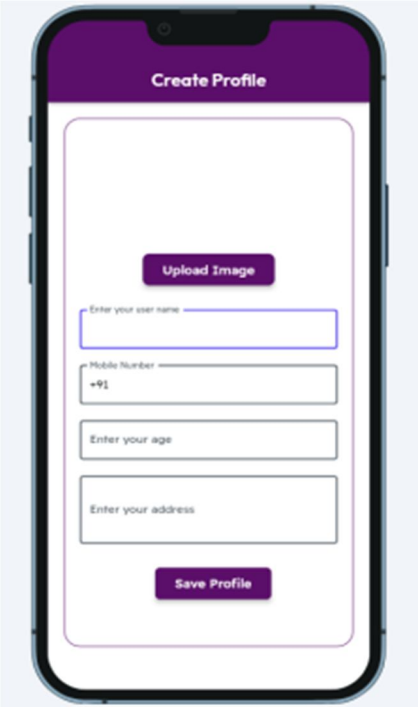
This is the page which has emergency contacts if the girls is in the distress then if she presses the sos buton then these contacts will receive an alert.

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 12 Issue V May 2024- Available at www.ijraset.com



Figno:11

This is the profile page where we can update the profile by filling in the necessary options given and if the user creates a new profile, then also will be directed to this page.



Figno:12

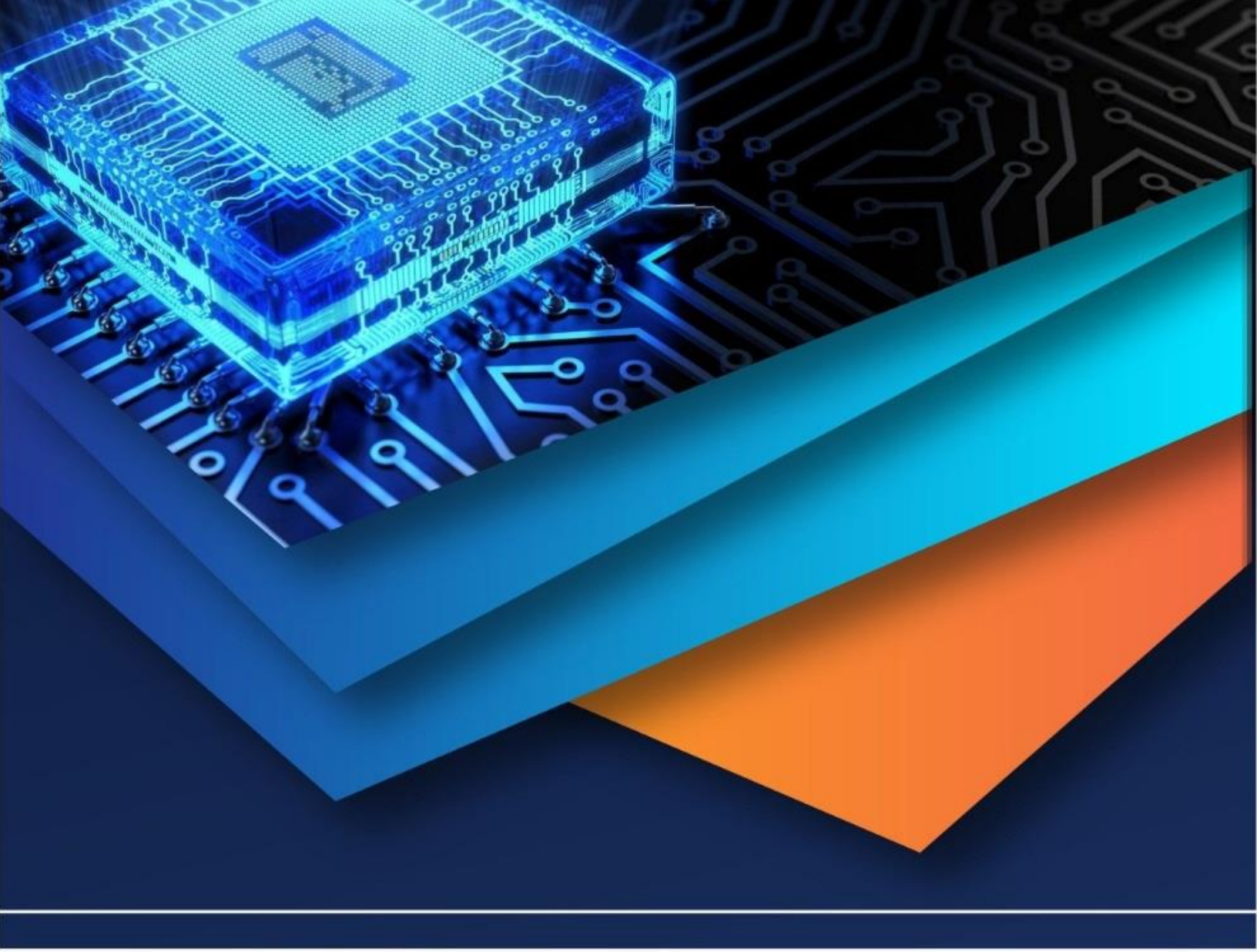
This is the page which is used to create a new profile.

V. CONCLUSION

We as engineers have tried to build a application which will help all the women in distress. In this application there are various features which will help the women to stay safe while travelling anywhere in the world. The development and implementation of the NARI SURAKSHA SETU Companion application have been a significant endeavor, which helps in empowering women and enhancing their safety .Through various planning, rigorous testing, and dedication to quality assurance, we have created a optimal and easy to use solution that offers users peace of mind and confidence in various situations. Moving forward, we remain committed to continuous improvement and innovation to ensure the application's effectiveness and impact on promoting safety and well-being for all.

REFERENCES

[1] Smart Bag For Women's Safety 14 2020 4th International Conference on Electronics on Electronics international Conference on Communication and Electronics Systems (ICCES).
[2] Women's Safety System by Voice IEEE Students\' Conference on Electrical, Electronics and Computer Science (SCEECS).
[3] "STREET SAFE\", Android App by People Guard LLC, September.
[4] "Design of a women safety Devices" by IEEE Region Humanitarian technology Conferences 2016.
[5] "Abhaya: An Android App for Safety of women" by 2015 Annual India conference IEEE.
[6] Ravi Sekhar Yarrabothula Bramarambika Thota, "ABHAYA: AN ANDROID APP FOR THE SAFETY OF WOMEN," IEEE ,1 December 2015.
[7] Alisha Maruti Gawade, Amruta Jadhav and Sachin Shankar Kumbhar, "S-ZONE:A SYSTEM FOR WOMEN SAFETY & SECURITY SYSTEM," Journal of Information, Knowledge And Research In Electronics And Communication Engineering ISSN: 0975 – 6779| Nov 16 To Oct 17 | Volume – 04, Issue – 02
[8] Sagar Khan, Harish Shinde, Ankita Zaroo, Rashmi Koushik , F. S. Ghodichor, "SHIELD: Personal Safety Application," IRJET Volume: 04 Issue: 05 , May - 2017.
[9] Piyush Bhanushali, Rahul Mange, Dama Paras, Prof. Chitra Bhole, "Women Safety Android App," IRJET Journal - Volume 5 Issue4, April 04 , 2018.
[10] N. Ramesh Kannan , S. Sujitha, S. Ganapathy Subramanian, "Women Safety Mobile App," International Journal on Cybernetics & Informatics (IJCI) Vol. 10, No.1/2, May 2021. - 2018 IEEE/CVF Conference on computer Vision And Pattern Recognition Workshops(CVPRW), 18-22 June 2018.
[11] Margherita bonetto,Pavel Korshunov,Giovanni Ramponi,Touragj Ebrahimi "Privacy in Mini-Drone based video surveliance" 2015 IEEE International Conference on Image Processing (ICP),27-30 Sept.2015
[12] Ya-ching chang,Hua-Tsung Chen,Jen-Hui Chuang,I-ChunLiao "Pedestrian Detection in Aerial Image using Vanishing Point Transformation and Deep Learning" 2018 25th IEEE International Conference on Image Processing (ICIP),7-10 Oct.2018.
[13] Sunyoung Cho,Dae Hoe Kim,Yong Woon Park "Learning dronecontrol actions in Surveillance videos" 2017 17th International conference on Control,Automation and Sysytems (ICCAS),18-21 oct.2017.
[14] Laird Dornin "Programming Andr id" second edition "O'Reilly Media, Inc.", 2012 -1-542 pages.
[15] "WOMEN'S SECURITY", Android App developed by AppSoftIndia,December17,2013 18] https://play.google.com/store/apps/details?id=com.zayaninfotec



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)