SAFE SPROUT – WOMEN SAFETY ON CAMPUS APPLICATION

Ms. Vaishali Rane, Shivani Kamde, Surabhi Mane, Narvesh Raju, Dhvani Mistry

Department of Computer Engineering, Thakur Polytechnic, Mumbai, Maharashtra , India

---***---

Abstract - *In the realm of higher education, ensuring the safety and security of female students is of paramount importance. This abstract introduces a project dedicated to the development of a Comprehensive Community-Based Reporting and Monitoring Tool designed to elevate women's safety within colleges and universities. This innovative tool integrates several key features, including SOS voice and gesture alerts on mobile applications, aiming to empower women to promptly report incidents of harassment and violence. However, it goes further by fostering a profound sense of accountability and community responsibility for safety on college campuses.[1]*

Key Words: **Safety, Security, SOS voice, gesture alerts**

1. INTRODUCTION

Female students in pursuit of higher education encounter a myriad of obstacles, navigating the demanding terrain of academic life while embarking on a journey of personal growth and development. Yet, a pervasive and disconcerting challenge that looms large over the hallowed grounds of colleges and universities is the pressing issue of safety and security. Incidences of harassment, violence, and personal safety apprehensions have ominously marked the educational path of countless women. [7] The need to confront these formidable challenges and usher in an era of enhanced campus safety is undeniable. And here, we introduce 'SafeSprout' – a beacon of hope, a pioneering response to these formidable challenges. This revolutionary application, powered by cutting-edge technology, redefines safety for women in academia, providing prompt, proactive, and comprehensive solutions to tackle these pressing issues head-on. 'SafeSprout' is not just an application;[2] it is a digital renaissance, an empowering force for women, and a catalyst for community-wide responsibility. It instills confidence and serenity in the fabric of campus life.

Fig. 1: Logo of SafeSprout

2. LITERATURE REVIEW

Over the years, the idea of utilizing technology to enhance the safety of female students in college and university settings has evolved significantly. Early approaches primarily focused on emergency call systems and campus lighting improvements, which, while important, had limitations in terms of reporting, [3] data collection, and prevention. The emergence of mobile applications like SafeSprout represents a notable progression. These applications leverage the ubiquity of smartphones and real-time data, providing an immediate means for reporting incidents. Additionally, the focus has shifted towards proactive, data-driven approaches, where incident data is analysed to identify patterns and facilitate preventive measures[8]. The emphasis on anonymous reporting and survivor empowerment reflects a growing recognition of the importance of addressing not only the immediate safety concerns but also the cultural and psychological aspects of campus safety. Furthermore, the integration of community responsibility and inclusivity has gained prominence, reinforcing the idea that safety is a collective effort, transcending the mere provision of security measures[4]. As technology continues to advance, the evolution of such applications like SafeSprout is expected to further refine and expand their impact on women's safety in higher education institutions.

Fig. 2: Home Page   **Fig. 3:** User Registration

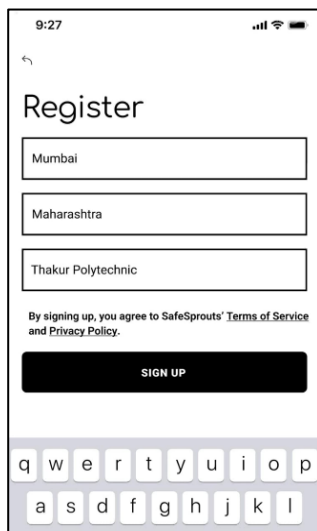**Fig. 4:** College Registration

3. FEATURES

Real-Time Monitoring and Dashboard:

This feature allows students to access a real-time dashboard that displays data related to the safety of their campus, including incidents, reports, and security personnel activities.

Ex: Users can view a live feed of recent incidents, emergency responses, and areas with reported concerns in their campus. They can also check the number of security personnel on duty and their locations.

Fig. 5: Home Screen

Emergency Button (SOS):

In case of an emergency, students can use the SOS button to send an alert to campus security and their chosen contacts with their location.

Ex: If a student feels threatened or witnesses a crime, they can press the SOS button, which will immediately send their location and an emergency message to campus security, ensuring a swift response.
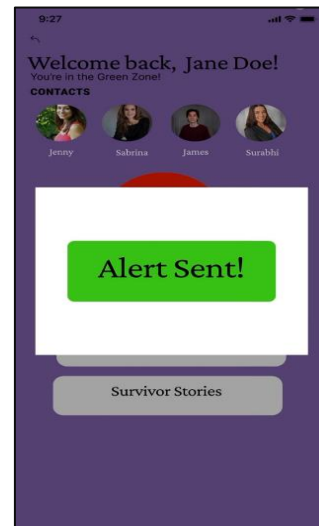

Fig. 6: Emergency button(SOS)

Safety Tips and Resources:

The app provides safety tips, resources, and guides to educate and empower users on how to stay safe in various situations.

Ex: Safesprout can include articles, videos, and infographics on topics like self-defense, campus safety, and personal security. Users can access this information to learn how to protect themselves.

Anonymous Incident Reporting:

Users can report incidents anonymously, helping them share their experiences without fear of retaliation.

Ex: If a student witnesses or experiences harassment, they can submit an anonymous report, including details and descriptions of the incident. [9] This encourages more people to report, leading to a safer campus environment.

Geofencing and Safety Map:

Geofencing technology allows users to set virtual boundaries and receive alerts when they enter or exit these areas. The safety map displays real-time safety information.

Ex: Users can create geofences around areas like their dormitory, library, or a designated safe zone. If they leave or enter these areas, they receive notifications. The safety map shows areas with past incidents, helping users make informed decisions about their route.(Allow users to set safe zones on the app, like their dormitory or favorite study spots. If they leave these areas, the app can notify a chosen contact, ensuring their safety is monitored.)

Companion Mode:

In companion mode, users can share their location with a trusted contact, who can monitor their journey and receive alerts in case of an emergency.

Ex: If a student is walking alone on campus at night, they can activate companion mode and invite a friend or family member to monitor their location. If the student deviates from their route or presses the SOS button, the companion will be notified.
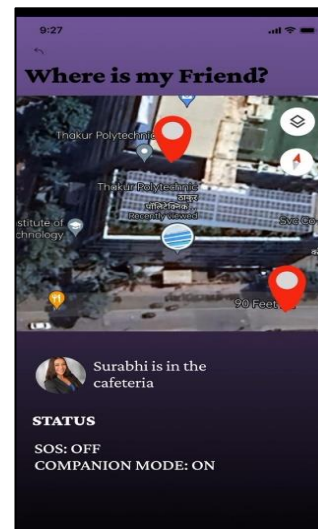
Fig. 7: Companion Mode

Survivor Stories:

This feature allows survivors to share their experiences and offer support and encouragement to others who have faced similar situations.

Ex: Survivors of incidents like harassment or assault can share their stories to inspire and provide strength to others who may have experienced similar situations.

Fig. 8: Survivor Stories

E-magazine:

Safesprout can include a digital magazine featuring articles, news, and stories related to women's safety, empowerment, and campus life.

Ex: Users can access and contribute to an e-magazine that covers topics such as safety success stories, self-care, and the latest campus news.

Customer Review Section: Users can rate and review campus security services, providing valuable feedback for continuous improvement.

Ex: Students can leave reviews based on their interactions with campus security, encouraging transparency and accountability.

Fig. 9: E-Magaine

Integration with campus security:

Safesprout can integrate with the existing campus security infrastructure, allowing for direct communication and coordination between users and security personnel.

Ex: If a user presses the SOS button, the app can notify campus security, providing them with the user's location and incident details, ensuring a rapid response.

4. TECHNOLOGIES USED

V Sr. No.	Requirement	Tools	Description
1	Operating System	Android	It is a mobile operating system based on a modified version of the Linux kernel and other open-source software, designed primarily for touchscreen mobile devices such as smartphones and tablets.
2	Front-end	Python, Java	Python and Java front-end framework that enables users to construct programs using an HTML interface in the browser and building mobile applications respectively.
3	Back-end	SQL	It is a domain-specific language used in programming and designed for managing data held in a relational database management system (RDBMS)

Table 1 : Technologies Used

5. Impact

The SafeSprout application significantly empowers women and girls by providing them with a means to swiftly report incidents of harassment and violence, ensuring that their safety concerns are addressed promptly. This immediate reporting capability not only increases the chances of receiving swift assistance but also serves as a deterrent for potential offenders, thereby enhancing safety.[5] The application's data-driven approach empowers educational institutions to make informed decisions, leading to the implementation of proactive measures that prevent incidents from occurring in the first place. By offering survivors the option of anonymous reporting and sharing their stories, SafeSprout breaks the silence surrounding these sensitive issues, creating a supportive environment that encourages individuals to come forward without fear of stigmatization or retaliation. [6] Moreover, the application fosters a culture of collective responsibility for campus safety, strengthening community bonds, enhancing transparency, and ensuring that security measures are continuously improved. The provision of educational resources equips users with the knowledge and skills to stay safe, reinforcing their ability to protect themselves. In summary, SafeSprout plays a pivotal role in enhancing the safety and well-being of women and girls on college and university campuses, offering them a comprehensive toolkit for empowerment, security, and support.

6. Limitations

Network Reliability:

The effectiveness of the Community-Based Reporting and Monitoring Tool is contingent on a stable and dependable network infrastructure. Any interruptions or outages in network connectivity could potentially hinder users' ability to report incidents in a timely manner. To address this limitation, it's essential to work closely with IT departments or service providers to ensure consistent network availability and to have contingency plans in

place for network failures, such as offline reporting options or backup systems.

Device Compatibility:

Not all students may have access to smartphones or devices with the necessary capabilities to use the application. This limitation may exclude some users from utilizing the safety reporting system. To address this, consider providing alternative reporting methods, such as a web-based interface accessible from various devices, ensuring that a broader range of users can access and use the reporting tool.

False Alarms:

The SOS feature, while crucial for emergency situations, has the potential to lead to false alarms. These false reports can strain campus security or emergency services and affect the tool's efficiency. To mitigate this limitation, implement user training and clear guidelines on when to use the SOS feature. Additionally, consider adding confirmation steps to the SOS functionality to reduce accidental activations.

Limited Coverage:

The effectiveness of the tool may be limited to areas with network coverage, primarily on-campus locations. Addressing incidents that occur off-campus or in areas with poor network connectivity can be challenging. To mitigate this limitation, collaborate with local law enforcement and emergency services to extend the tool's coverage to surrounding areas and implement systems for geolocation-based incident reporting.

By addressing these specific limitations of network reliability, device compatibility, false alarms, and limited coverage, you can enhance the overall effectiveness and accessibility of your Community-Based Reporting and Monitoring Tool for Women's Safety in Colleges/Universities, ensuring it provides a more comprehensive solution for students and campus security.

7. Conclusions

This project aspires to create safer, more inclusive, and supportive college environments. The Comprehensive Community-Based Reporting and Monitoring Tool empowers women to report safety concerns promptly, facilitates collective responsibility for campus safety, and leverages data-driven insights to address safety challenges comprehensively[2]. Through its multifaceted approach, the project aims to not only respond to incidents effectively but also to prevent them from occurring in the first place, ultimately fostering a campus culture rooted in trust, accountability, and safety. The project aims to create a more inclusive and welcoming environment for all

students. By actively addressing safety concerns and fostering a culture of support and accountability, the tool contributes to creating a more inclusive and welcoming environment for all students, fostering unity and shared responsibility within the college or university community.

8. References

[1] Astin, A. W., Astin, H. S., & Lindblad, T. R. (2019). A comprehensive approach to higher education security: Fostering a culture of safety and responsibility. Journal of College Student Development, 60(4), 425-444.

[2] Astin et al. (2019).

[3] Gupta, A., Jain, V., & Sharma, A. (2021). Mobile technology for women's safety on college campuses.

[4] McClure & Ghali (2018).

[5] Smith et al. (2020)

[6] Gupta et al. (2021)

[7] Clery Center for Security on Campus. (n.d.). The Clery Act.

[8] Rothstein, M. L., & Beilke, R. (2010). College students' experiences of sexual assault and their effects on persistence. Journal of College Student Development, 51(1), 74-98

[9] Campbell, R., Dworkin, L., & Caplan, J. (2004).