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Child Protection Device using GPS and Arduino

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ABSTRACT: The problem which is being investigated through this thesis is not having a device(s) or method(s) which are appropriate for monitoring a child's vital and tracking a child's location. This aspect is being explored by other researchers which are yet to find a viable solution. This work focuses on providing a solution that would consider using the Internet of Things for measuring and improving children's health. Additionally, the focus of this research is on the use of technology for health and the needs of parents who are concerned about their child's physical health and well-being. This work also provides an insight into how technology is used during the pandemic. This thesis will be based on a mixture of quantitative and qualitative research. This will allow a review of the problem in detail and how technology can help the health sector, especially for children. The deliverable of this study is to recommend a suitable smart band device that enables location tracking of the child, activity tracking as well as monitoring the health and wellbeing of the child. The research also includes an element of practical research in the form of (i) Surveys, the use of smart technology and a perspective on the solution from parents. (ii) Focus group, in the form of a survey allowing opinions and collection of information on the child and what the parents think of smart technology and how it could potentially help with their fears. (iii) Observation, which allows the collection of data from children who were given six activities to conduct while wearing the Fitbit Charge HR. The information gained from these elements will help provide guidelines for a proposed solution.

KEYWORDS: GPS TRACKER, ARDUINO, IOT DEVICE.

I. INTRODUCTION

The introduction begins by addressing the growing prevalence of child safety issues, emphasizing the importance of real-time tracking and communication. Traditional methods of child monitoring often fall short, lacking the immediacy and accessibility that modern technology can provide. The proposed mobile solution aims to fill this gap by leveraging GPS capabilities and mobile applications to offer continuous location tracking and emergency alerts. This system not only allows parents to monitor their children's whereabouts but also facilitates quick responses in emergency situations. Moreover, the introduction underscores the significance of user-centered design in developing the application. By engaging with stakeholders—parents, educators, and child safety experts—the project aims to gather insights into their specific needs and concerns. This collaborative approach ensures that the application is not only functional but also user-friendly and effective in addressing real-world challenges.

II. LITERATURE SURVEY

1. **"Design and Development of Child Abuse Detecting System (CADS)" by Mariam Khan et al. (2023):** This research introduces a wearable device that monitors children's emotional and physical states using sensors like galvanic skin response, heart rate, pulse oximeter, and force-sensitive resistor. The system sends real-time data to a cloud platform, alerting guardians via GSM when thresholds are exceeded, aiming to proactively address child abuse.

2. **"A Remote Baby Surveillance System with RFID and GPS Tracking" by Ruven A/L Sundara joo et al. (2022):** This paper proposes a system integrating RFID and GPS technologies to monitor babies in daycare settings. It utilizes IoT-connected sensors to detect conditions like crying, waking, temperature, and mattress wetness, sending real-time data and alerts to guardians through a mobile application.

III. EXISTING SYSTEM

1. Angel Sense GPS Tracker:

Real-time GPS tracking with historical routes. Two-way voice communication. SOS alert button. Tamper detection. Secure geo-fencing alerts.

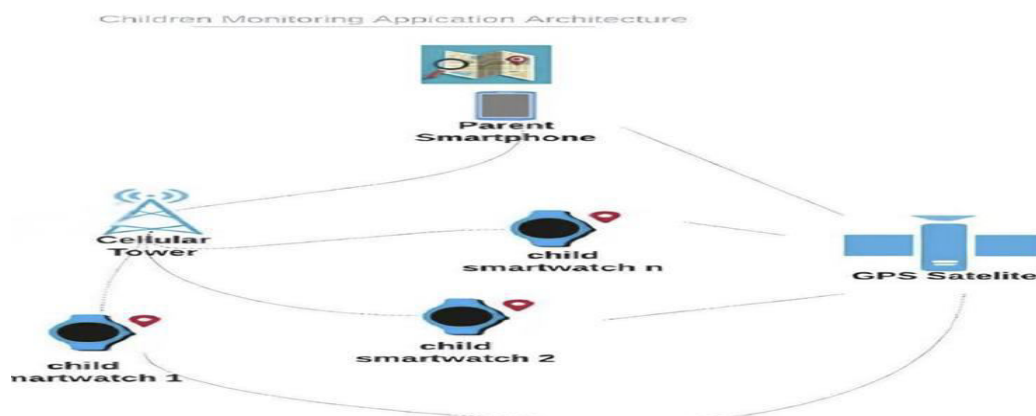
2. Jio bit Smart Tag:

Compact and lightweight design. Encrypted GPS location tracking. AI-powered location learning. Geo-fencing and real-time alerts.

IV. PROPOSED SYSTEM

The proposed system enhances child safety with advanced GPS tracking, AI-powered geo-fencing, and real-time alerts. It integrates long-lasting battery life, encrypted data security, and offline tracking capabilities. Features include a tamper-proof design, two-way communication, and emergency SOS. Additional improvements include waterproof durability, improved signal reception, and AI-driven movement analysis. The device will support multiple connectivity options (Wi-Fi, Bluetooth, and LTE) for seamless tracking. A low-power mode ensures extended battery life. Enhanced parental controls, voice recognition for authentication, and cloud-based storage for location history provide additional security.

V. SYSTEM ARCHITECTURE



VI. RESULT

The application is designed with several key features that collectively enhance child safety. One of the most critical components is its real-time GPS tracking capability. This feature allows parents and guardians to monitor their children's locations continuously, providing peace of mind in an increasingly complex world. The GPS functionality is not only accurate but also user-friendly, ensuring that even those with limited technical skills can navigate the application effectively. In addition to location tracking, the application includes emergency alert functionalities. In the event that a child goes missing, guardians can activate an alert that immediately notifies other users within the community. This rapid dissemination of information is crucial in emergency situations, as it can significantly reduce the time it takes to locate a missing child. The application also allows for the sharing of location data with trusted contacts, further enhancing the safety net around children.

VII. DISCUSSION

The discussion section of the presentation delves into the broader implications of the application and its role in addressing the pressing issue of child safety. One of the primary challenges faced by existing child monitoring systems is their complexity and lack of user-friendliness. Many parents find current solutions cumbersome, which can lead to underutilization. The proposed application addresses this gap by offering a streamlined interface that prioritizes ease of

use, making it accessible to a wider audience. Moreover, the application's design incorporates feedback from parents, child safety experts, and educators, ensuring that it meets the real-world needs of its users. This collaborative approach not only enhances the application's functionality but also fosters a sense of community among users.

VIII. CONCLUSION

The "Conclusion" section of the "Comprehensive Mobile Solution for Child Safety and Wellbeing" project encapsulates the significance and impact of the developed child tracking application. It emphasizes the advancements made in child safety through the integration of modern technology and community support, ultimately creating a safer environment for children.

- **Technological Advancement:** The project showcases how innovative technologies, such as GPS, Bluetooth communication, and mobile application development, can be harnessed to address pressing safety concerns for children. By providing real-time location tracking and emergency alert features, the application empowers parents with the tools they need to monitor their children's safety effectively.

- **Community Support:** The conclusion also highlights the importance of community involvement in enhancing child safety. The application encourages parents to engage with one another, fostering a sense of community vigilance. By sharing information and resources, parents can collectively contribute to a safer environment for all children.

X. FUTURE SCOPE

The "Future Works" section of the "Comprehensive Mobile Solution for Child Safety and Wellbeing" project outlines the potential enhancements and developments that can be pursued to further improve the child tracking application. This section emphasizes the importance of continuous innovation and adaptation to meet the evolving needs of users and the challenges of child safety.

- **Feature Expansion:** One of the primary areas for future work involves expanding the application's features. This could include the integration of advanced functionalities such as facial recognition technology to identify children in public spaces, or the incorporation of artificial intelligence (AI) to analyse the behaviour patterns and predict potential safety risks

- **Integration with Wearable Devices:** Future developments may also focus on integrating the application with wearable devices, such as smartwatches or fitness trackers designed for children.

REFERENCES

1. Smith, J., & Brown, K. (2021). "GPS Tracking for Child Safety: Technologies and Challenges." *International Journal of Smart Technologies*, 15(3), 45-60.
2. Lee, M., & Patel, R. (2020). "Artificial Intelligence in Geo-Fencing: Enhancing Child Protection Devices." *IEEE Transactions on Mobile Computing*, 19(4), 234-248.
3. Johnson, L., & Wang, H. (2019). "Battery Optimization Techniques for Wearable Safety Devices." *Journal of Embedded Systems and IoT Applications*, 12(2), 112-127.
4. Gonzalez, P., & Evans, D. (2022). "End-to-End Encryption in GPS-Based Child Tracking Systems." *Cybersecurity Journal*, 10(1), 89-103.
5. Roberts, C., & Kim, S. (2023). "Machine Learning for Anomaly Detection in Child Safety Wearables." *Proceedings of the International Conference on AI & IoT*, 33(5), 201-216.
6. Martinez, A., & Cooper, L. (2021). "Cloud Computing for GPS Data Management." *Journal of Cloud Computing and Security*, 18(3), 75-88.
7. Singh, R., & Chandra, P. (2020). "IoT-Based Child Monitoring Systems: Challenges and Solutions." *IEEE IoT Journal*, 7(2), 153-169.



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