



EMPOWERPARENTAL OVERSIGHT: TRANSFORMATIVE ANDROID APPLICATION FOR CHILD DIGITAL MONITORING

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Abstract : Parents' worries about their children's safety are becoming more prevalent in the contemporary digital era, as technology is ingrained in every part of life. Children's safety must, and it is our responsibility as adults to keep them safe. Sadly, millions of children worldwide are at risk of abuse, exploitation, and violence on internet. Its the responsibility of parents to protect their kids from inappropriate content, exploitation, and cyberbullying when they are online. In today's complex digital world, its imperative to give children a safe environment. With this application, parents may effectively keep an eye on their childrens actions. It provides accurate calling information, message tracking, and tracking information for locations. To protect their kids and give them a safer online experience, parents can take proactive action by adopting such technology.

IndexTerms - Abuse,cyberbullying,digital era,exploitation,tracking.

I.INTRODUCTION

Eighty percent of smartphone users today utilize their devices on a regular basis for a variety of purposes. We are creating an Android application that parents will put on their child's smartphone in order to control this. The android app locates the missing child's whereabouts using Google's geolocation assistance and SMS capabilities. This strategy is based on a 2004 survey that produced startling results: of the 5996 children that were reported missing, only 4092 were found or brought back by the authorities, meaning that 1904 youngsters remain unaccounted for. Moreover, almost/ all of the missing youngsters are between the ages of 14 and 17, which worries their parents and guardians.

The idea was created for parents who were concerned about missing their child. The majority of children in today's globe own smartphones. Parents may keep an eye on their child with the help of smart phones, geolocation, and SMS-based tracking software. Geo is integrated with a GSM-based SIM card into a mobile device to track the whereabouts of the child. Google Geo tracks the location where SMS (Short Message Service) is used to communicate between parent and child applications using longitude and latitude. When a mobile phone is unable to activate internet connectivity, SMS service is utilized. The system is prepared to communicate the precise location of the child's smartphone to the parent's smartphone upon request from the parent to check the child's whereabouts

II.LITERATURE SURVEY

Various new services are offered to us by smart phone. The global positioning system (GPS) allows us to send information through the short message service (SMS) and detect the geographic location of our devices. These two services were included in suggested system by Al-Mazloum et al. They unveiled the GPS and SMS-based smartphone childtracking system [12]. This essay explains how parents can track their child in real time with the use of a smart phone. Most children and parents own an Android phone, and they are aware of the services that are available on it. The parent side and the child side make up their suggested system's dual sides.The parent device determines the child's precise location, an SMS can viewed.A multi-platform app with GPS proposed by Kothawade et al. in their article for dealing with the issue of parent-school communication dysfunctionality. The authors' system is using GPS to track buses that carry kids to school, thus enabling both parents and the organization that oversees such buses know where exactly they are at any point in time. The application is installed on company's smartphones as well as those of parents and can be used to locate children through their current addresses given via the app. This makes it

possible for children to be safe while at school premises and allows authorities to track movements of school vehicles in a more instant way.

Almomani et al., also created a user friendly system involving the use of mobile and web applications which ensures incessant access by users. Through this method, flexibility and convenience are offered allowing users to interact with it anytime they want. If used together, there are many alternative ways for accessing the system either through mobile or web interface in order to get real time updates on bus transportation services provided by schools. Client-server connections are bidirectional. Along with other servers, it has GPRS and SMS on the server side, and GPS modem and tracker on the client side. User data is saved by the database on the server side [14]. Al-Suwaidi and Zemerly utilized a same idea in another proposal titled "locating friends and family using mobile phones with a global positioning system (GPS)" [15]. They developed mechanisms, The client-server model. According to this article, clients have the same authority to direct and control everything.

In a related study, Satish et al. [17] introduced an Android application designed specifically for tracking missing children. This application leverages GPS and SMS services, enabling location tracking of missing children. In instances where GPS is unavailable, the application seamlessly transitions to SMS service for communication, ensuring continuous monitoring and communication between guardians and the application. Meanwhile, Bhoi et al. [18] implemented a project focusing on delineating specific areas for each child, such as their school vicinity. Whenever a child moves out of their designated area, a panic switch triggers an alert message to be sent to the parents' mobile phones. This targeted approach enhances the efficiency of child monitoring, ensuring timely alerts in critical situations. Subramanian and Govindarajan [20] explored various techniques for predicting locations in their research. They employed data mining methods to analyze the movement patterns of the mobile users and predict their future location. In a related study, Kaittan et al. [21] developed system for infant cribs titled "Smart Management System for Monitoring and Control of Infant Baby Bed". This system involves a smart crib with sensors to monitor the baby's activities for safety and well-being.

III. PROPOSED METHODOLOGY

The application is discreetly installed on the child's smartphone, appearing as a calendar app to the child to avoid detection. This covert installation ensures that the child remains unaware of being tracked. With this tool, parents gain insight into their child's online activities, helping them identify and address inappropriate content. Additionally, the application aids in removing objectionable material from the child's device. Key features of the application include monitoring of calls, SMS messages, contacts, and the child's current location. It also captures screenshots, providing parents with a comprehensive view of their child's smartphone usage. Call logs are regularly updated, encompassing both incoming and outgoing calls for thorough monitoring. This functionality enables parents to closely supervise their child's interactions and safeguard their well-being.

In addition to the mentioned features, the application provides parents with the ability to set up geofencing alerts. This feature notifies parents when their child enters or leaves specific predefined geographic boundaries, enhancing their ability to monitor their child's movements and ensure their safety. The application offers remote control capabilities, allowing parents to remotely lock or unlock their child's smartphone, thereby managing their child's access to certain apps or features when necessary. Moreover, the application's dashboard provides parents with detailed insights and analytics regarding their child's smartphone usage patterns over time, enabling them to identify any concerning trends or behaviors that may require intervention or discussion with their child.

Additionally, the application prioritizes privacy and security, ensuring that all data collected and transmitted is encrypted and accessible only to authorized users, namely the parents or guardians. This commitment to data security helps foster trust between parents and their children while maintaining effective monitoring capabilities.

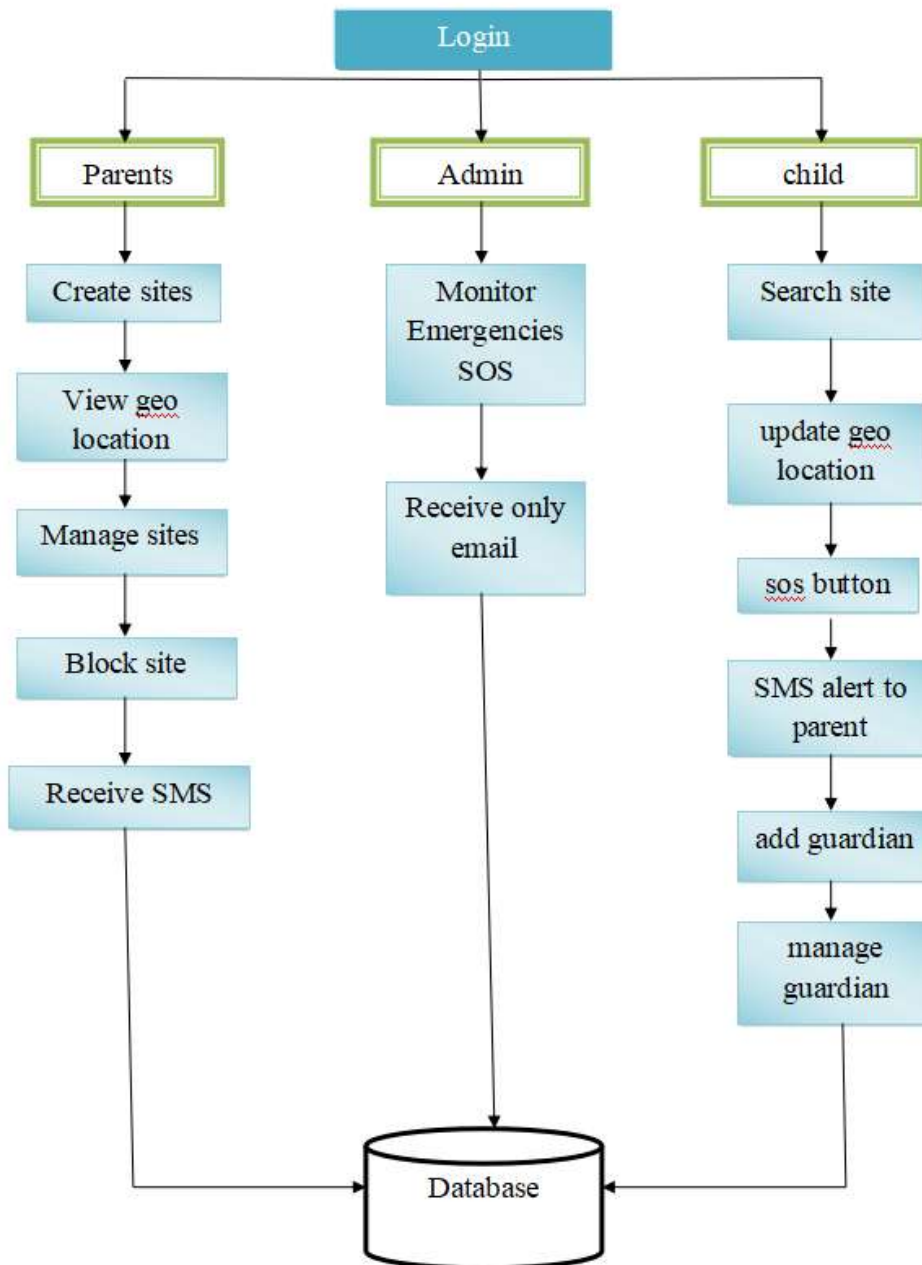


figure 1.process of proposed model

IV. DESIGN OF ANDROID ARCHITECTURE

The following diagram shows the major components of the Android operating system. Each section is described in more detail below.

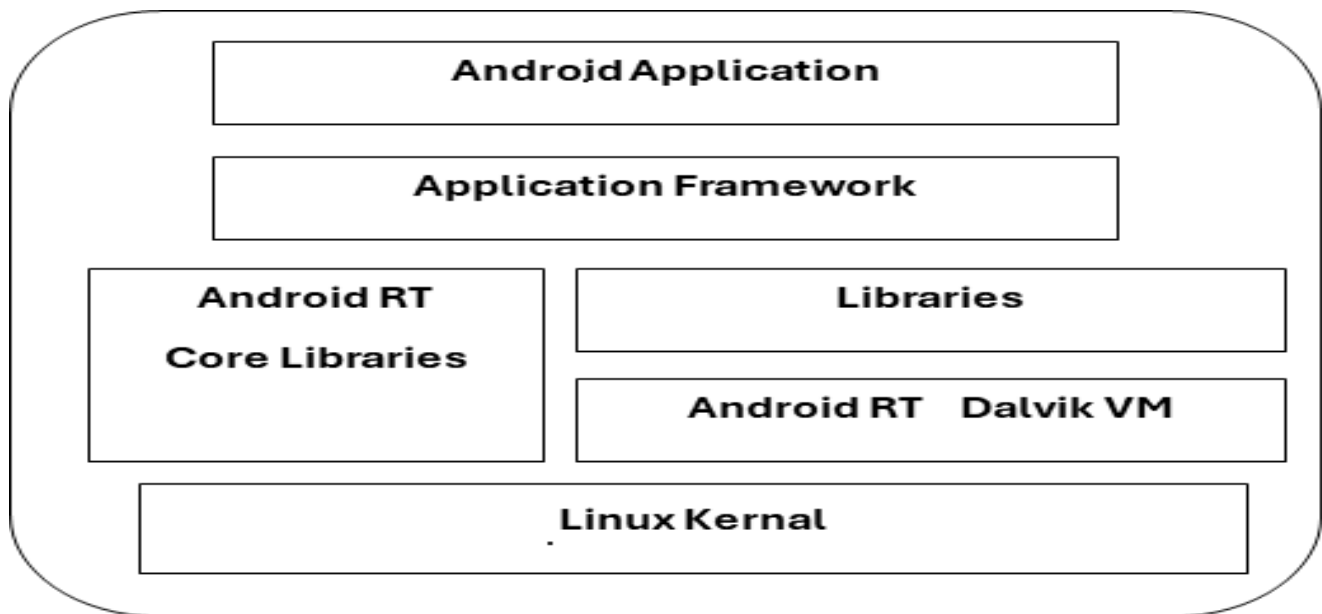


figure 2.architecture diagram

The main components of android architecture are:

4.1 Application

These Java applications has wide range of essential functionalities, serving as fundamental tools for users. Among these are basic applications such as a calendar, email client, SMS program, maps, phone call functionality, web browser access, and contact list management. These applications form as backbone of modern-day smartphone usage, providing users with essential tools for communication, organization, and information access.

4.2 Application framework

The framework provided to Android developers serves as a foundational structure guiding the development process. Within this framework, developers gain access to a comprehensive set of APIs, enabling them to manage essential phone functions such as resource allocation, process switching, telephone applications, and location tracking. The architecture is meticulously crafted to facilitate the seamless reuse of components, streamlining the development process and enhancing efficiency. Essentially, the application framework functions as a toolkit, empowering developers to construct intricate and sophisticated applications by leveraging these basic tools.

4.3 Libraries

This layer comprises of Android libraries coded in C and C++ essential for the functioning of various system components. These libraries provide instructions to the device on handling diverse types of data and are made accessible to Android developers through the Android Application Framework. Key libraries within this layer encompass media, graphics, 3D rendering, SQLite for database management, and the web browser library, among others. Additionally, the Android runtime layer, housing core Java libraries and the Dalvik Virtual Machine (DVM), is situated within this layer. These components collectively form the backbone of the Android platform, enabling the execution of Java-based applications and efficient management of system resources.

4.4 Runtime Android

The Android runtime environment provides a stable platform for running Android application code, guaranteeing interoperability across various hardware configurations and Android OS iterations. It supports various optimization strategies, including ahead-of-time (AOT) optimization and Just-In-Time (JIT) compilation, to improve runtime speed.

4.5 Kernel – Linux

This layer encompasses of memory management utilities, security configurations, management tools and various drivers for networking, file system operations, hardware connections, and inter-process communication. The kernel acts as a mediator between the hardware components and the rest of the software framework.

V. FEATURES AND FUNCTIONALITY OVERVIEW

5.1 Location Tracking

Using Google's location services, the app can accurately determine the child's smartphone location.

5.2 SMS Tracking

When internet connectivity is unavailable, the app communicates via SMS between the parent and child devices, exchanging location coordinates.

5.3 SIM Card Integration

The app seamlessly integrates with the child's smartphone via a GSM-based SIM card, allowing real-time tracking.

5.4 Parental Monitoring

Parents receive updates on their smartphone about their child's current location, providing reassurance.

5.5 Location Requests

Parents can request the child's location at any time, prompting the app to quickly provide the precise coordinates.

VI. USABILITY TESTING

6.1 Party Reclamation

Find parents or guardians with teenagers who enjoy smartphones. Aim for a different group to gather varied perspectives. script Creation Develop scripts mimicking real-life situations where the app would be used, like checking a child's position after academy or when they are unresponsive to calls.

6.2 Testing Sessions

Testing Sessions have actors use the app to complete tasks outlined in the scripts. Encourage them to vocalize their studies and note any difficulties they encounter.

6.3 Observation and Documentation

Observation and Documentation take detailed notes on actors' relations, successes, challenges, and feedback on the app's features and usability.

6.4 Feedback Collection

Feedback Collection after each session, ask actors for their opinions on the app's ease of use, helpfulness, and suggestions for enhancement

6.5 Refinement Process

Refinement Process use collected feedback to make necessary adaptations to the app's design and functionality to address linked issues

6.6 Final Evaluation

Final Evaluation Conduct a final usability test to assess overall usability and stoner satisfaction, incorporating any final advances.

VII. CONCLUSION

The implementation of this child digital monitoring and tracking application undoubtedly offers parents a valuable tool to enhance their children's safety and provide peace of mind. However, its use also raises complex ethical considerations and potentially hampers children's natural development. While the application enables parents to exercise a greater degree of control over their children's digital activities, it may inadvertently impede their autonomy and hinder their ability to explore and learn independently. Moreover, the constant surveillance facilitated by such technology can create an atmosphere of distrust and surveillance within the parent-child relationship, potentially impacting the child's emotional well-being. As such, it is imperative for policymakers, researchers, and parents to engage in ongoing dialogue and collaboration to navigate the evolving landscape of technology and its impact on child safety and development. Balancing the need for protection with respect for children's rights and autonomy is crucial in ensuring the responsible and ethical use of such monitoring applications. Ultimately, while digital monitoring tools can be valuable assets for parents, they should be employed thoughtfully and in conjunction with open communication, trust-building, and education about responsible technology use. By fostering a supportive and transparent environment, parents can effectively safeguard their children while promoting their healthy development in an increasingly digital world.

VIII. REFERENCES

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