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A Survey on Anti-Theft Mobile Tracking and Monitoring System

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Abstract: The rapid proliferation of mobile devices has led to a significant increase in the cases of mobile theft and unauthorized access to personal data. To address these security concerns, an "Antitheft Mobile Tracking and Monitoring System" is proposed. The application aims to enhance the security of mobile devices by providing users with the means to track and recover their stolen or lost devices. The Antitheft Mobile Tracking and Monitoring System offers a comprehensive solution to combat mobile theft and enhance device security. By combining real-time GPS tracking, image capturing and use of mail protocols to facilitate them has provided it with capabilities with strong authentication measures, the system provides users with effective tools to mitigate the risks associated with mobile device theft. As mobile devices continue to play an integral role in modern life, such security measures are essential to protect user privacy and personal information. The widespread adoption of mobile devices has revolutionized the way we communicate, work, and access information. With this technological advancement, however, comes an unfortunate increase in the incidents of mobile theft and unauthorized access to personal data. The loss of a mobile device not only represents a financial setback but also exposes users to potential breaches of their privacy and security. This real-time tracking capability enables users and authorized personnel, such as law enforcement agencies, to pinpoint the device's location accurately.
Keywords: GPS technology, Real-time Notification, SMTP, Authentication.

I. INTRODUCTION

With changing times, the mobile technology has changed a lot and in the last few years we have seen the arrival of various new kinds of gadgets in the form of Smart- phone, camera-phone, Android and tablet phones. In fact, the handset industry has turned from simple budget handsets to ultramodern high end mobile phones. Today's device is almost everything it is fashionable, innovative, appealing, high-performing, durable, stylish and multitasking. Latest gadgets can be used for various purposes like browsing mobile, internet, playing games, emailing, and blogging, messaging, GPS, YouTube, Google search, Gmail and more. Mobile devices have become an extension of ourselves, it is paramount to develop innovative approaches that not only enhance user convenience but also fortify their digital security. The application is poised to contribute significantly to this endeavor by offering an integrated solution that not only addresses the immediate concern of device theft but also proactively prevents unauthorized access to sensitive information. In today's digitally connected world, safeguarding our smartphones is paramount. The Anti-Theft Mobile Tracking Application presents a comprehensive solution to combat theft and secure sensitive information. This outlines its key features, implementation strategy, and data privacy measures, highlighting its potential to redefine mobile security. They offer peace of mind to users by increasing the chances of retrieving their devices and protecting their sensitive information. To provide a user-centric and technologically advanced solution that not only deters theft but also offers peace of mind to users in an increasingly digital and interconnected world. The problem statement underscores the importance of addressing this issue and the role that the Antitheft Mobile Tracking System can play in mitigating its impact.

II. LITERATURE SURVEY

[1] The Smart Anti-Theft Vehicle System introduced in this paper is a revolutionary solution that utilizes Internet of Things (IoT) technology to enable real-time monitoring of any equipped vehicle from anywhere. This system is implemented using Global Positioning System (GPS), Global System for Mobile Communication (GSM)/General Packet Radio Service (GPRS) and Microcontrollers, making it extremely convenient for users to monitor their vehicles. [2] The Smart Anti-Theft Vehicle System introduced in this paper has a unique feature that allows users to locate their vehicle using GPS and Google maps. In case of any movement from its original position, the application notifies the user and tracks the new position of the vehicle. This way, the vehicle owner can seek help from nearby police or friends.

As mentioned earlier, the Smart Anti-Theft Vehicle System was developed using the Agile software methodology. This approach emphasizes on iterative and incremental development, which allowed the developers to identify and address issues early in the development process. As a result, the application is efficient, reliable, and user-friendly. [3] This report presents a unique methodology for tracking stolen laptops using GPS, GSM, Motion Sensor, and Cloud Services. Unlike other existing laptop tracking techniques available in the market, this methodology can track laptops even if they are not connected to the internet or are in turn off mode. With the implementation of IoT, the owner can track their stolen laptop the moment it makes any movement, triggering an alarm embedded in the device that can make noise audible up to 10 meters, deterring the thief from carrying it. Moreover, the owner can monitor the location of their stolen laptop via a mobile application installed on their phone by communicating with the GPS and GSM modules embedded in the laptop through the cloud.[4] Security of parked vehicles is a major concern these days, and this paper presents a simple and cost-effective solution to address this issue. The proposed vehicle tracking system uses the Global Positioning System (GPS) and Global System for Mobile Communication (GSM) technologies, along with a smartphone application, for tracking any movable asset. With the help of the smartphone application, the user can track their stolen vehicle with just a click of a button, making it a convenient and efficient solution for vehicle tracking. [5] Mobile tracking is a significant challenge that has been extensively studied from both practical and theoretical aspects. This paper proposes a mobile phone security system that allows us to determine the location of mobile devices with high accuracy. With the help of this system, users can keep their mobile devices secure and track their location in real-time, ensuring their safety and preventing theft.

III. METHODOLOGY

1) *User Registration and Login:* The user downloads and installs the Android application on their mobile device. Users create an account by providing their contact information and setting up a profile with personal details.
2) *Generate the Pin:* The unique pin is generated and send to another registered mobile so that the unauthorized access of mobile is prevented.
3) *Enable Antitheft Features:* Users activate anti-theft features, such as device tracking, Message reading, and Image capturing within the app.
4) *Location Tracking:* The app continuously tracks the device's location using GPS . This data is periodically transmitted to the app's server and from the server to the respective Mail.
5) *Silent to General Mode:* The silent to general mode feature in an anti-theft mobile tracking system is a functionality that allows the user to control the sound profile of their lost or stolen mobile device. This feature is useful for tracking and recovering the device without alerting the thief to its presence
6) *Alerts and Notifications:* The app can send alerts and notifications to the user's registered email or another device if suspicious activity is detected, like location of the device and captured image.
7) *Reporting to Authorities:* Users can use the app to report the theft to local law enforcement, and the app can provide location data to aid in recovery.
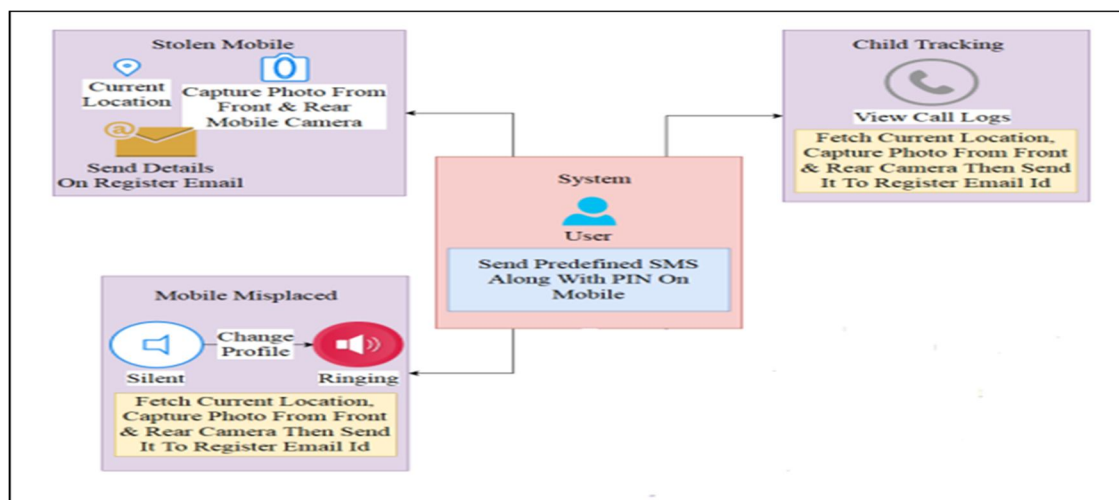
IV. ARCHITECTURE

Figure: Architecture

The architecture of our Anti-Theft Mobile Tracking System is meticulously crafted to establish a resilient and scalable platform dedicated to safeguarding mobile devices in urban environments. The system comprises the following integral components:

A. Mobile Application

At the forefront of user interaction is the mobile application, meticulously designed for seamless operation on both Android and iOS platforms. Users can effortlessly download and install it from their respective app stores.

B. Server Backend

Embraced within the cloud infrastructure, the server backend orchestrates critical tasks. It processes real-time location data, administers alerts, and adeptly manages user queries. Additionally, it serves as the repository for essential information pertaining to tracked devices and user preferences.

C. Firebase Integration

The application is seamlessly integrated with Firebase, Google's mobile and web application development platform. Firebase provides authentication, real-time database functionality, and cloud storage, which are crucial for the application's real-time capabilities.

D. Functionality

This application provides users with a seamless experience while leveraging GPS technology to efficiently track and locate lost or stolen mobile devices. By recording the device's geographical coordinates in real-time, users can easily track its location and recover it. Typically, users follow a series of steps to use this application effectively. These steps include:

1) *Installation:* To install the application, users need to connect their mobile device to the system and run the required code. This process is straightforward and ensures that the application is installed correctly.
2) *Registration:* To create an account, new users must provide essential details such as their email address and password. Additionally, they are required to generate a unique PIN to ensure the security of their account. This step is crucial in safeguarding their personal information and ensuring that the application is used securely.
3) *Enable Permission:* Users is asked to allow the required permissions such as location, read message and camera.
4) *Notification:* After registration, users are prompted to provide the required permissions. Once granted, users receive real-time notifications of their device's location. In case of suspicious activity, the application sends alerts and notifications to the user's registered email or another device, providing location data and captured images. This feature ensures that users are always informed about their device's activity and can take appropriate action if necessary.
5) *Reporting:* If a user's device is stolen, they can use the application to report the theft to local law enforcement. The application can provide location data to aid in recovery, making it easier for users to retrieve their stolen device. This feature provides users with an added layer of security and ensures that their devices are always protected.
6) *Community Engagement:* By actively involving individuals in using the application, it promotes a sense of community participation and responsibility. This feature encourages users to be vigilant and report suspicious activity, ensuring that the community is actively involved in protecting each other's devices. This sense of shared responsibility fosters a safer environment for all users of the application.

V. CONCLUSION

In conclusion, the Anti-Theft Mobile Tracking and Monitoring System offers a comprehensive and versatile solution for mobile device security and monitoring needs. With features like real-time location tracking and call log monitoring, it enhances the safety of mobile devices. Notably, its capacity to support parental monitoring, including location tracking and image capture, serves as a valuable tool for ensuring child safety and peace of mind. This system is a practical and indispensable asset in today's digital world, where the security of mobile devices and the well-being of loved ones are paramount.

VI. ACKNOWLDGEMENT

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