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Mobile Tracking System Using SMTP Protocol

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Abstract: ***The objective of this project is to enhance mobile security through a robust Android application capable of tracking, locking, and recovering lost or stolen mobile devices. Utilizing the capabilities of Android devices, the system offers real-time tracking, remote locking, device wiping, and geo fencing features. It supports Android OS and allows users to control their devices remotely via SMS commands or through a web-based dashboard using their account credentials. Users can track the location of their device, remotely lock it, and even manipulate the camera to capture images of the possessor. The rising incidence of mobile device theft, which often results in unauthorized access and personal data breaches, underscores the importance of this sophisticated Mobile Tracking System (MTS). This system addresses these security concerns by providing comprehensive functionalities that enhance user safety and device recovery.***
Keywords: Mobile Tracking System (MTS), Authentication, Tracking Commands, Contact Information, Location.

I. INTRODUCTION

In today's era of ubiquitous mobile technology, the necessity for reliable and effective mobile tracking systems has grown Significantly. These systems are crucial across various fields such as fleet management, public safety, security, and personal navigation. Employing a variety of cutting-edge technologies, including cellular networks, complex algorithms, and the Global Positioning System (GPS), mobile tracking systems provide precise and up-to-date location data for mobile devices. This paper introduces an advanced Mobile Tracking System (MTS) designed to enhance location-based services, thereby improving security and navigation capabilities.

The rapidly developing field of mobile technology demands innovative solutions that extend beyond traditional navigation due to the widespread use of smartphones and other connected devices. Mobile tracking systems enable users to effortlessly track and manage the movement of devices, which is vital for emergency response situations where quick location information is crucial, and in logistics and transportation for route optimization that enhances efficiency. The creation of the Mobile Tracking System addresses the challenges of real-time position monitoring, providing a solution that not only improves navigation but also meets broader social needs Anti-theft features integrated into mobile tracking systems offer a comprehensive solution for safeguarding and retrieving misplaced or stolen mobile devices. By leveraging GPS technology and combining hardware, software, and communication technologies, these systems enable real-time tracking of a device's geographic location, facilitating prompt recovery in the event of loss or theft. Furthermore, they empower users with remote control features to take proactive measures against unauthorized access, such as remotely locking devices or wiping sensitive data to prevent breaches Overall, by combining cutting-edge technology with user-friendly interfaces, the Mobile Tracking System provides an invaluable tool for enhancing device security and user peace of mind, ensuring that both the devices and the data they contain are protected against theft and misuse.

II. LITERATURE REVIEW

[1] This study introduces a low-cost, portable tracking, monitoring, and accident alert system utilizing NodeMCU. Designed for low power consumption, it features a specialized slip wake-up algorithm that minimizes energy use. The system employs IoT technology for cloud data storage and access, and integrates MEMS accelerometer and ultrasonic sensor technology for accident detection and prevention. Primarily serving as an anti-theft mechanism for vehicles, it provides SMS alerts and logs all data on the ThingSpeak platform. It also offers the capability to inform the Regional Transport Office (RTO) when the registered vehicle number is detected.
[2] This paper proposes an innovative anti-theft approach that utilizes motion trajectory analysis and user behavior features to detect potential theft at early stages. The method leverages a cellphone attitude detection algorithm within a human coordinate system, combined with an Iterative Kalman Filter Inertial Navigation Algorithm, to track the motion trajectory of the phone. The system's ability to analyze these trajectories allows it to issue timely theft alerts. Extensive testing shows the system maintains an accuracy rate exceeding 90.33%. [3] This project focuses on developing an Android application for location tracking using SMS. The app also features functionality to capture images of the thief through remote control of the device's camera.

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It enables device tracking and control via simple SMS commands and email communications. Additional security measures include monitoring of unusual walking patterns, with the option to lock the device remotely, and a feature that allows sending GPS location data from an alternate number in case of theft. [4] Addressing non-technical losses in utility sectors, particularly energy theft which incurs significant financial losses, this paper suggests the integration of efficient hybrid power generation systems with advanced grid technologies, fault detection, and protection systems. It advocates for the development of an "Advanced Hybrid Grid," which integrates these technologies into a unified model that supports real-time data and status access through wireless radio transmission or Radio Frequency (RF) technologies.[5] This research utilizes the Arduino platform to create an advanced anti-theft system for vehicles, incorporating GPS satellite positioning and various sensors to control peripheral devices. It features a system that allows vehicle tracking via Google Maps and includes a reed switch to detect and respond to external force, activating a mechanism that turns the front windshield opaque to prevent theft, enhancing vehicle security significantly.

A. Problem Statement

In today's digital era, mobile devices have become indispensable, storing a wealth of sensitive personal and professional data. However, the increasing prevalence of mobile device theft poses significant risks, not only to the physical security of these devices but also to the integrity of the data they contain. To address this growing concern, this project employs Kotlin to develop an advanced "Anti-Theft Detection System" for Android smartphones. This system is designed to offer users a robust, technologically advanced solution that not only detects theft but also enhances their sense of security in our interconnected world.The aim of this research is to underscore the importance of resolving mobile theft issues and to explore how the Anti-Theft Mobile Tracking System can significantly mitigate these risks. Through its innovative use of mobile technology, the system seeks to safeguard mobile devices more effectively and ensure users' peace of mind.

B. Architecture

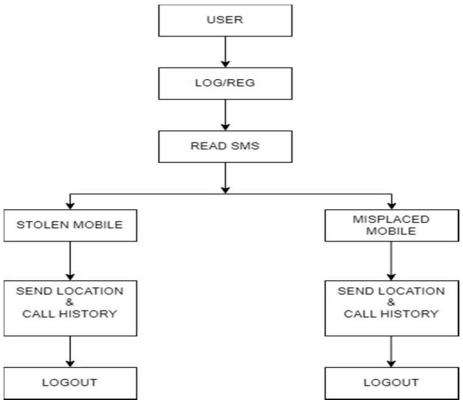


Fig.1.Architecture

C. Flow Diagram

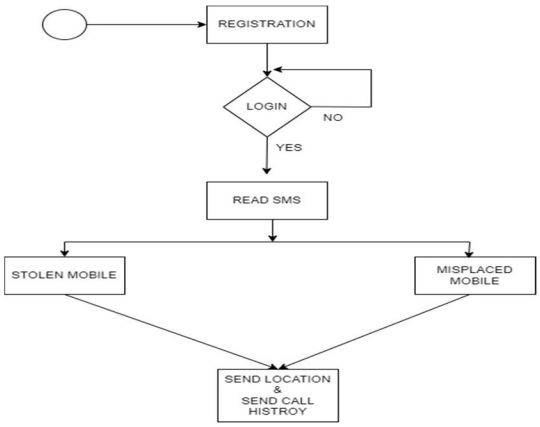


Fig.2 Flow Diagram

D. The Working Steps of Application

Step 1: Get Started

Users begin by accessing the application.

Step 2: Registration

New users are prompted to enter their email address, password, and mobile number to create an account.

Step 3: Login

Users log in to the application using the credentials established during registration.

Step 4: Pin Creation

After logging in, users are required to create and confirm a personal identification number (pin) for an additional layer of security.

Step 5: Device Tracking Setup

Users can configure settings depending on whether they want to actively track the device's location or if the device has been reported lost or stolen.

Step 6: Location and Security Actions

If a device is reported lost or stolen, the system activates its tracking functionality to locate the device. The application can control the device's camera remotely to capture its surroundings for additional verification, and the image is securely stored for user access.

Step 7: Retrieving Additional Details

The application collects relevant data such as call logs from the device to aid in recovery efforts.

Step 8: Notification to User

All collected data, along with the device's location, is sent to the user's registered email address for immediate action.

III. USER INTERFACE DESIGN

The name of the app is 'Mobile_Tracking' .If the software's user interface is visually appealing, easy to use, responsive quickly, understandable, and consistent across all interacting screens. This is the logo of the app and



Fig.3 .Logo

Users gain system access through a secure login page in the mobile tracking system, ensuring authentication and safeguarding sensitive information.

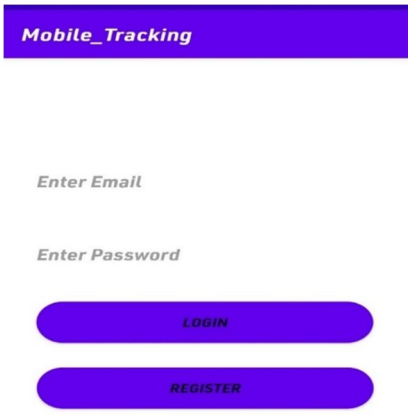


Fig. 4. Login

The registration process in the mobile tracking system begins with a user-friendly page, facilitating seamless entry of essential information for account creation.

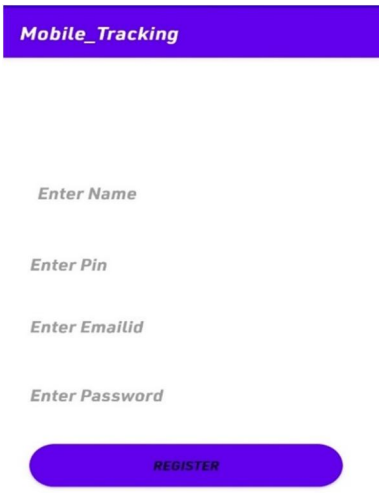


Fig. 5. Registration

The user can view their most recent message from their phone by logging into the system with a different device.



Fig. 6. Read SMS

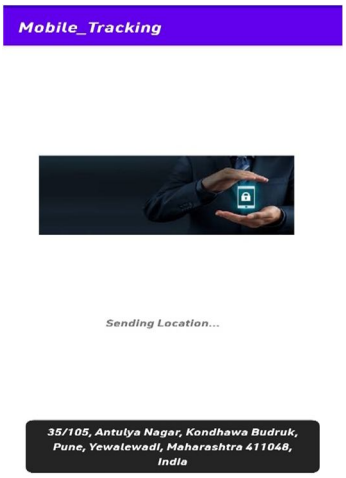


Fig. 7. Sending Location

The user can view their most recent calls from their phone by logging into the system with a different device.



Fig.8. Sending History

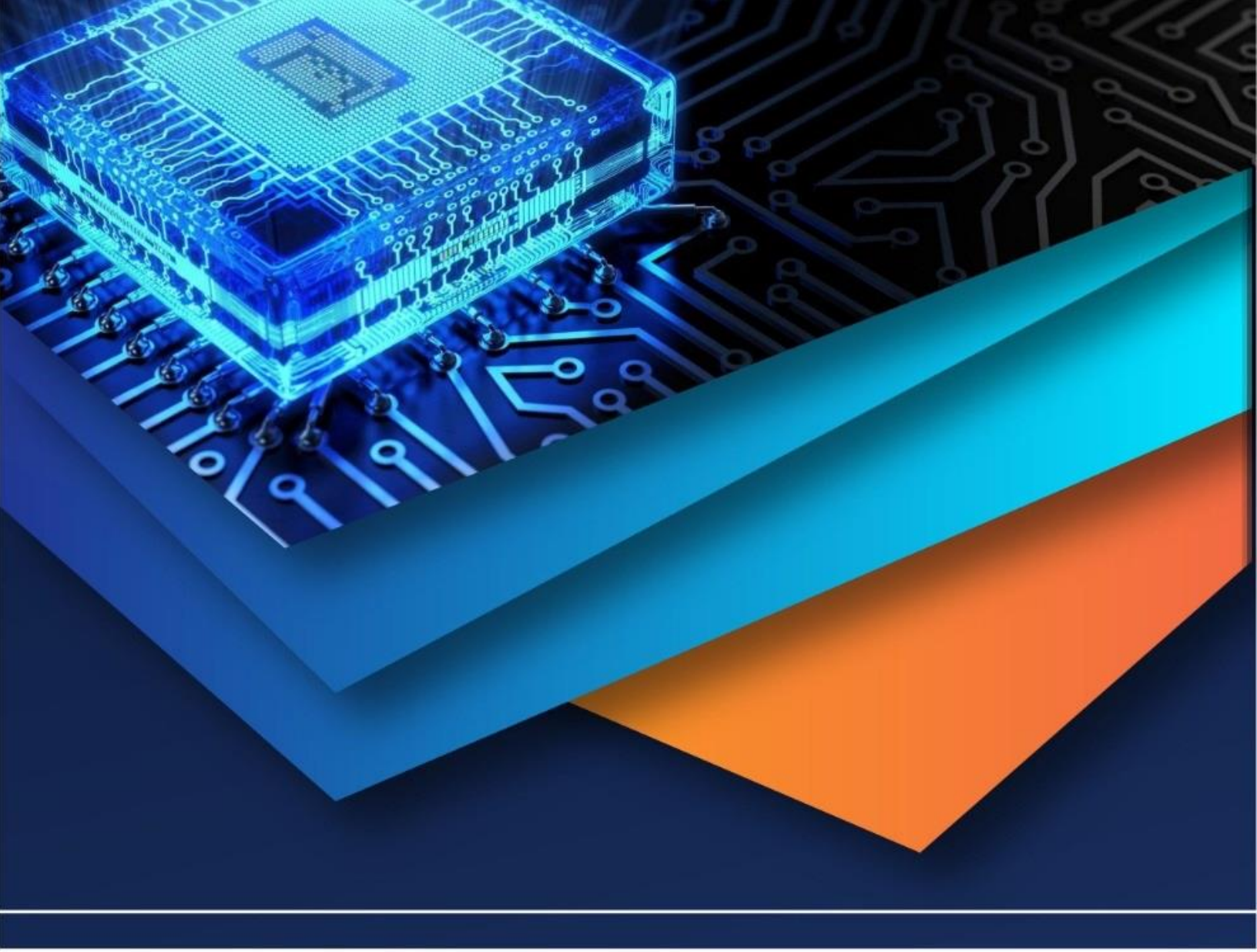
IV. CONCLUSION

This study has successfully developed and implemented a mobile device detection system utilizing Kotlin. The system capitalizes on the device's inherent sensors to monitor unauthorized movements and orientation changes, proving to be an effective tool in theft prevention. Extensive evaluations and comparisons with existing systems have shown that our solution excels in accurately detecting unauthorized access and promptly issuing alerts. Its user-friendly interface and judicious resource management make it a viable option for safeguarding mobile devices against theft. Nevertheless, there is room for improvement, particularly in enhancing the system's accuracy and responsiveness across various environments.

This research contributes significantly to the field of mobile security, offering a robust and efficient theft detection system that ensures the protection of user devices and data. Looking forward, we aim to refine the system's algorithms further and improve its integration with other security frameworks. Additional studies will explore its adaptability in different operational contexts, which is expected to broaden its applicability and effectiveness in real-world scenarios.

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