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Anti -Theft Device Tracking System

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ABSTRACT
This project's goal is to develop an Android application that offers SMS-based location tracking capabilities for Android devices. We can also follow the images of the individual who took our Android phone.
This function supports Android OS and sends and receives emails and SMS in response to calls. With simple SMS commands, you can track your Android device. Tracing a location: We can use basic SMS commands to locate the misplaced phone. In a theft gadget, the camera can be remotely manipulated to take pictures. It is said of mobile gadgets that they are portable and that a person can carry them from one place to another. Mobile device theft occurs frequently, and the current system watches users' walking patterns and movements.

Keywords: authentication, tracking commands, contact information, location, Camera.

1. Introduction

Anti-theft mobile tracking systems represent a comprehensive solution for safeguarding and retrieving misplaced or stolen mobile devices through the integration of GPS technology, mobile applications, remote control functionalities, and notification systems. These systems aim to enhance security by continuously monitoring the device's location and, when necessary, employing a combination of hardware, software, and communication technologies to remotely manage specific functions.
Mobile devices have become indispensable tools in our daily lives, often containing sensitive personal and professional information. Therefore, protecting these devices from theft and unauthorized access is of paramount importance. Anti-theft mobile tracking systems serve as invaluable instruments in this regard, offering a holistic approach to device security.
By leveraging GPS technology, these systems enable real-time tracking of the device's geographic location, facilitating prompt recovery in the event of loss or theft. Moreover, users are empowered with remote control features, allowing them to take proactive measures to prevent unauthorized access. For instance, users can remotely lock their devices to thwart unauthorized use or remotely wipe the device's data to prevent sensitive information from falling into the wrong hands.
The primary objective of these systems is to assist users in retrieving their misplaced or stolen mobile devices swiftly and efficiently. By combining cutting-edge technology with user-friendly interfaces, anti-theft mobile tracking systems provide peace of mind to users, knowing that their devices and the data they

contain are safeguarded against theft and misuse.

2. Literature Review

This paper[1] presents the design of a low-cost, portable online and offline tracking, monitoring, and accident alert system using NodeMCU. The system includes an advanced algorithm designed for low power consumption, with a specific focus on a low power slip wake-up algorithm to minimize energy usage. IoT technology is utilized for storing and accessing data through the cloud. The accident alert and prevention system are implemented using MEMS accelerometer and ultrasonic sensor technology. The system serves as an anti-theft measure for vehicles, with SMS alerts sent to the concerned person. Experimental results demonstrate real-time speed with location information, and all data is saved on the ThingSpeak platform. Additionally, the system can provide information to the Regional Transport Office (RTO) if the vehicle number is registered in the system.

This paper [2]proposes an anti-theft method based on motion trajectory and user features to detect and prevent theft in the initial stages. The method utilizes a cellphone attitude detection algorithm in the human coordinate system to determine the phone's status. It also employs an Iterative Kalman Filter Inertial Navigation Algorithm to calculate the phone's motion trajectory. By analyzing the trajectory and movement features, the system can issue a warning when theft is detected. The method is evaluated through extensive experiments, demonstrating an overall system accuracy of more than 90.33%.

This project [3] aims to develop an Android application that provides location tracking functionality for Android devices using SMS. The application also includes a feature to track photos of the person who stole the device. It communicates with the device through SMS and email, allowing users to track their device using simple SMS commands. The system tracks the device's location and can remotely control the camera to capture images. The existing system monitors user walking patterns, locking the device if unusual movements are detected. The proposed system includes a feature to save an alternate number for the user. In case of theft, a message can be sent from the alternate number to the stolen device, allowing the user to retrieve the GPS location.

This paper [4] addresses the issue of non-technical losses, particularly energy theft, which results in significant financial losses for utility providers. To combat this problem, the paper proposes the integration of efficient hybrid power generation, advanced grid technologies, fault detection and protection systems, and methods to combat electrical pilferage in a power system. The proposed solution aims to create an operational miniature model of an "Advanced Hybrid Grid" that combines these concepts into a single model. Additionally, the system allows for real-time data and status access using advanced technologies such as wireless radio transmission or Radio Frequency (RF).

This research papper [5] aims to utilize the Arduino platform to design an anti-theft ystem for cars, incorporating GPS satellite positioning and sensors to control peripheral devices. The system allows users to track their car's position on Google Maps using their mobile phones. Additionally, a reed switch on the door detects improper external force, triggering the anti-theft system to activate the front windshield to become completely opaque, thus reducing the risk of car theft.

3. Problem Statement

The research topic for the "Anti-Theft Mobile Tracking System" These days, mobile devices are an essential part of our life since they store sensitive and important personal data. But there's a big risk to the data and the device itself because of the rise in mobile theft instances. The project intends to use Kotlin to

build a "Anti-Theft Detection of Mobile System" for Android smartphones in order to address this problem. To give users peace of mind in an increasingly digital and connected world by offering a technologically sophisticated, user-centric solution that not only detects theft. The significance of resolving this issue and the potential contribution of the Antitheft Mobile Tracking System to lessening its effects are emphasized in the problem definition.

In order to identify unlawful movements or changes in orientation, the system will make use of the built-in sensors on the device. The system will initiate an alert mechanism upon detection of such action, informing the user and/or notifying a designated contact. The system might also provide tools for remotely locking or wiping the device to stop illegal access to private data.

4. Objectives

4.1. User Interface for Mobile Apps:

a. Enable users to register and create accounts by providing their login information.
b. Securely confirm user identities through user authentication.
c. Management of User Profiles: Allow users to make changes to their details of Mobile Devices Include users' mobile devices in the system Use functions like lock, erase, alarm, and locate with the help of the remote control options

4.2 Tracking of Location.

a. Integrate GPS to track the device's current location in real time.
b. Use Geo fencing to set up safe zones and get notifications when the device departs them.
c. Location History: For reference, save and show location history.

4.3 Security and Privacy:

a. Data Encryption: Secure user data and communications with strong encryption.
b. Access Control: Manage sharing and access permissions for different users and roles.
c. Privacy Settings: Allow users to control data tracking preferences.

4.4. Alerts and Notifications:

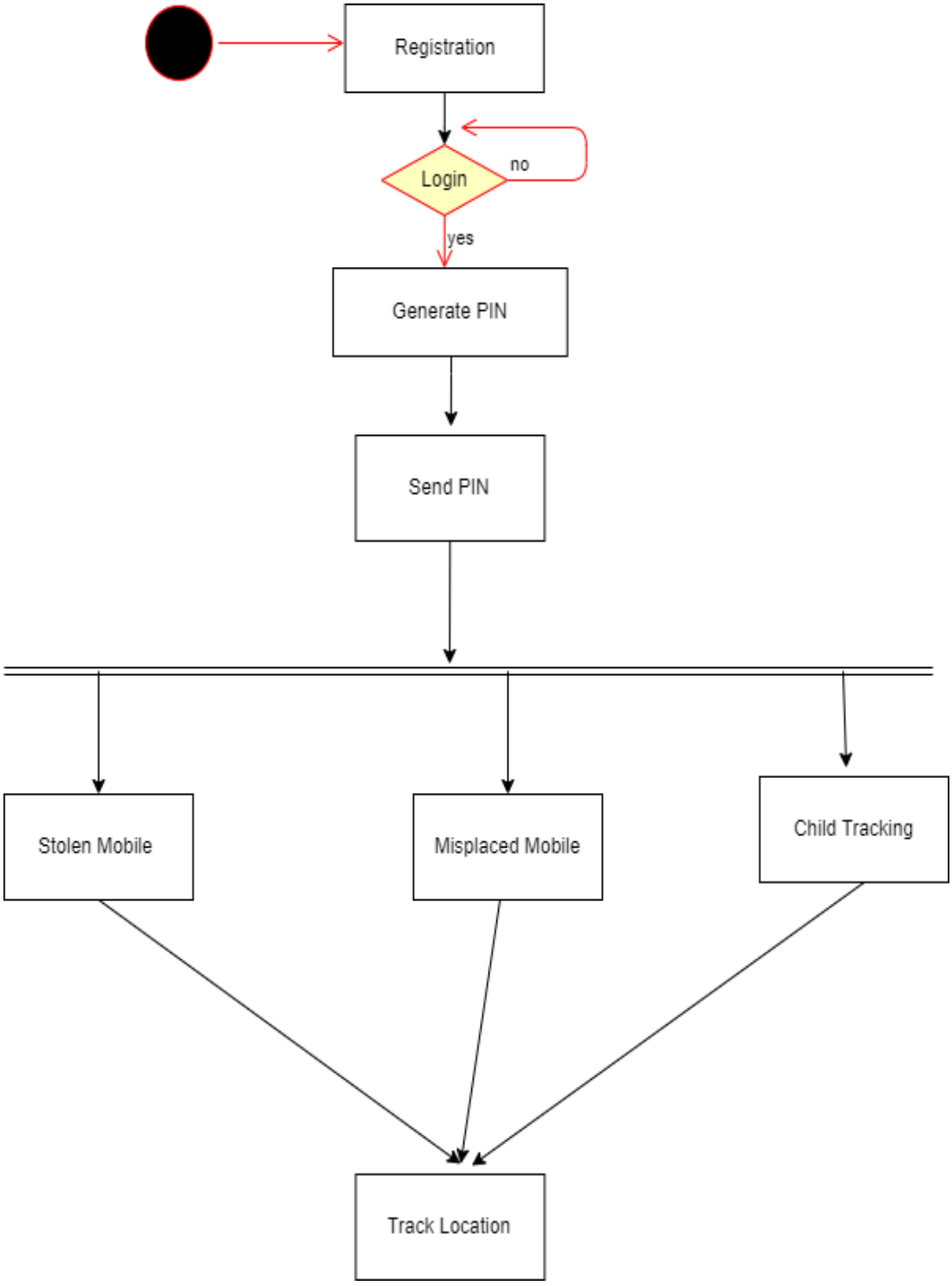
a. Theft Alerts: Send immediate alerts to the owner when unauthorized use is detected.
b. Low Battery Alerts: Notify users when the device's battery is critically low.

5. System Module

SYSTEM MODULE: The application consists of four modules. A user data repository We can store every detail pertaining to a user in a database during the user information storage phase. Information such as a username, password, email address, and backup phone number are requested from the user. The user must authenticate themselves in order to log into the application using their username and password. While contact devices like location and photo employ information like email address and backup phone number. Command data repository We may change instructions in this module, such as the camera, to take images of the person who stole our phone. We may also issue commands to track the mobile device from here. These are the observations made in the SMS feature update, which will make it easier for the user to follow their Android smartphone. Monitor user: To continuously monitor and communicate the location of the mobile device, we may add a GPS during the track user phase. The location will be tracked by registered user-based SMS commands for tracking that were issued to the device. If a new SIM card is installed into the phone, the user may receive a notification. Access to cameras We may use short SMS commands to operate the device's camera. We transmit the pictures to our registered mail address using

SMTP. The smartphone will take a picture of the user using its front-facing camera when they respond to registered user-based SMS commands for tracking. The registered email address receives the recorded snapshot after that.

6. Anti-Theft Mobile Tracking System



The Working Steps of Application

Step 1: Get going

Step 2: Enter the user's email address, password, and Mobile number to register if they haven't already.

Step 3: The user must log in using the same password and credentials.

Step 4: The user must create a pin and confirm it.

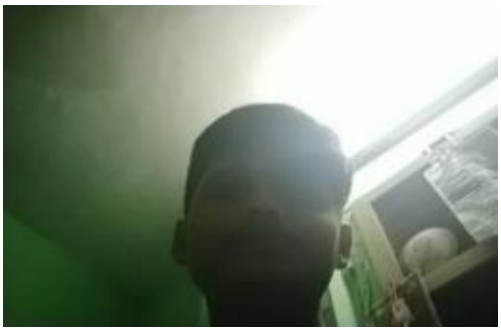
Step 5: The user must select whether they wish to track their child or whether the gadget was stolen or misplaced.

Step 6: If the user selects any of them, the device will locate the thief, take a picture using its camera, and email it to the registered mobile email address.

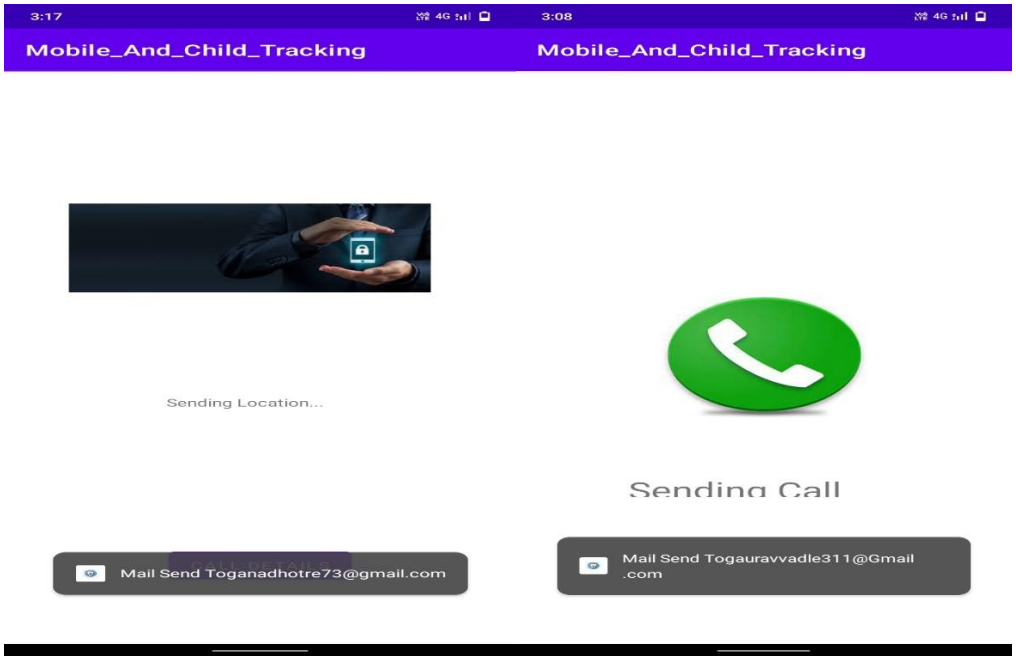
Step 8: Call details will also be obtained if the user selects the child tracking option.

Step 9: Following the photo and call information, a notice will be sent to the user's registered email address.

A. Captured Photo: when the user click on track command then device's front camera turns on, takes a picture, and sends it to the registered email account.



B. Sending a Location and call Details: when user click on track then device sends location and call details to the register email address.



Conclusion:

In conclusion, this research has presented a theft detection system for mobile devices developed using Kotlin, which leverages the device's sensors to detect unauthorized movements or changes in orientation.

Through a thorough evaluation, including testing in real-world scenarios and comparison with existing solutions, the system has demonstrated its effectiveness in accurately detecting theft and triggering timely alerts.

The system's user-friendly interface and efficient use of resources make it a practical solution for protecting mobile devices against theft. However, further research is needed to enhance the system's capabilities, such as improving its accuracy and responsiveness in diverse environments.

Overall, this research makes a significant contribution to the field of mobile security by providing a reliable and efficient theft detection system that can help users protect their valuable devices and data. Future work could focus on refining the system's algorithms, enhancing its integration with other security measures, and exploring its application in different contexts to further improve its effectiveness.

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