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Result Paper On "Mobile Theft-Prevention System"

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Abstract

The proposed system enables mobile tracking using GPS to determine a device's location. When activated via a message, the application retrieves the current latitude and longitude, sending this information to a predefined email. It aims to enhance child safety and address mobile theft challenges. If a theft occurs, the system detects SIM card changes or device restarts, sending a password to an alternate number for device locking and location tracking. Additionally, it can activate a sound on the lost device. Developed with Android Studio, Java, and SQLite, the system includes features like capturing images of the culprit and reporting them to authorities.

INTRODUCTION

Mobile technology has evolved significantly, shifting from basic budget handsets to advanced smartphones, camera phones, and tablets. Modern devices are stylish, multifunctional, and capable of various tasks, including internet browsing, gaming , messaging, and accessing services like YouTube and Gmail. A key feature of these devices is the Global Positioning System (GPS), which consists of 24 to 32 satellites orbiting the Earth at around 11,000 miles, powered by solar energy. Originally developed for military use by the U.S. Department of Defence, GPS has since become a vital tool for civilian navigation, enabling precise location tracking and helping users find the shortest routes or locate lost devices and track family members. Over recent years, mobile technology has evolved dramatically, introducing a variety of devices such as smartphones, camera phones, and tablets. The handset industry has transitioned from basic budget models to modern, high-end smart phones that are stylish, multifunctional, and high-performing. These devices can perform numerous tasks, including internet browsing, gaming, messaging, and ac cessing platforms like YouTube and Gmail. Recent advancements in neural machine translation (NMT) suggest potential improvements, as demonstrated by Transcoders—a model that uses monolingual code from GitHub to translate between C++, Java, and Python, achieving high accuracy and surpassing traditional methods.

LITERATURE SURVEY

As per paper [1], traditional vehicle tracking systems suffer from high energy consumption. The proposed system addresses this by integrating GPS and GSM technologies to enable real-time location tracking, particularly useful in theft recovery scenarios. By improving algorithmic efficiency and accuracy, the system aims to enhance monitoring, collision avoidance, and anti-theft capabilities in smart vehicles.

According to paper [2], the increasing rate of mobile phone theft highlights the inadequacy of current recovery methods. The proposed solution utilizes GPS tracking combined with user behavior analysis to detect unauthorized usage. Incorporating machine learning techniques can further improve the accuracy of behavior prediction, enhancing the system’s ability to identify and respond to theft effectively.

As per paper [3], the high frequency of vehicle theft in urban areas necessitates more robust security systems. The proposed solution employs Vehicle Ad-hoc Networks (VANET) and GPS tracking to improve theft detection and recovery. Future enhancements may include integration with emerging 5G technologies to strengthen communication and system responsiveness.

According to paper [4], power grid systems remain vulnerable to energy theft and operational faults. The proposed advanced hybrid grid utilizes IoT sensors to enable real-time monitoring and alert mechanisms. Future research may explore integrating blockchain technology to enhance data security and system integrity

As per paper [5], the increasing rate of vehicle theft is attributed to insufficient detection systems and delayed real-time alerts. The proposed solution incorporates facial recognition, IoT notifications, and shock sensors to enhance theft detection and response. Future improvements may include the integration of advanced machine learning for better recognition accuracy and the use of blockchain to secure data transmission.

According to paper [6], the absence of real-time analysis of historical location data limits the effectiveness of current theft detection systems. The proposed approach utilizes AI algorithms to analyze location patterns and identify suspicious behavior. Enhancements could include training AI models on more diverse datasets and implementing real-time learning to adapt to dynamic environments.

7 NFC and RFID Based Anti-Theft Mobile Security System. [8] Yadav And Sharma 2020 Existing solutions are not suitable for contactless theft prevention and secure device tracking. NFC and RFID for secure device access and theft prevention. Expand NFC/RFID range and develop integration with biometric authentication for enhanced security.

Limitation of Existing Work

Battery Drain: Continuous tracking and monitoring can lead to significant battery drain, which may prompt users to disable these features. User Awareness: Many users are unaware of the features available to protect their devices, such as remote locking or data wiping, leading to underutilization. Social Engineering Attacks: Thieves may use tactics to bypass security features by impersonating the device owner. Physical Tampering: Thieves can disable or remove tracking apps, or perform a factory reset, erasing security measures.

Proposed System

Location Tracking: Enable real-time tracking of the mobile device's location using GPS technology. It verifies hall tickets through AI-based fraud detection, preventing impersonation and forgery. The system ensures real-time authentication, secures candidate data, and strengthens examination integrity while addressing challenges like accuracy and database security.

PROBLEM STATEMENT

Mobile theft is a significant and growing issue, with millions of devices stolen annually, leading to financial loss and data breaches. Current prevention methods often lack user engagement and effective recovery solutions. Users frequently neglect security features, making devices easy targets for increasingly sophisticated thieves. A robust mobile theft prevention system must enhance user awareness, improve recovery rates, and leverage advanced technology while

ensuring ease of use.

OBJECTIVE

• Provides configurable, high-frequency location tracking with fallbacks for low-battery scenarios.

• Supports a rich suite of remote commands (alarm, ring, photo capture, notifications).

• Guides users through streamlined permission requests and battery-optimization settings.

ARCHITECTURE DIAGRAM

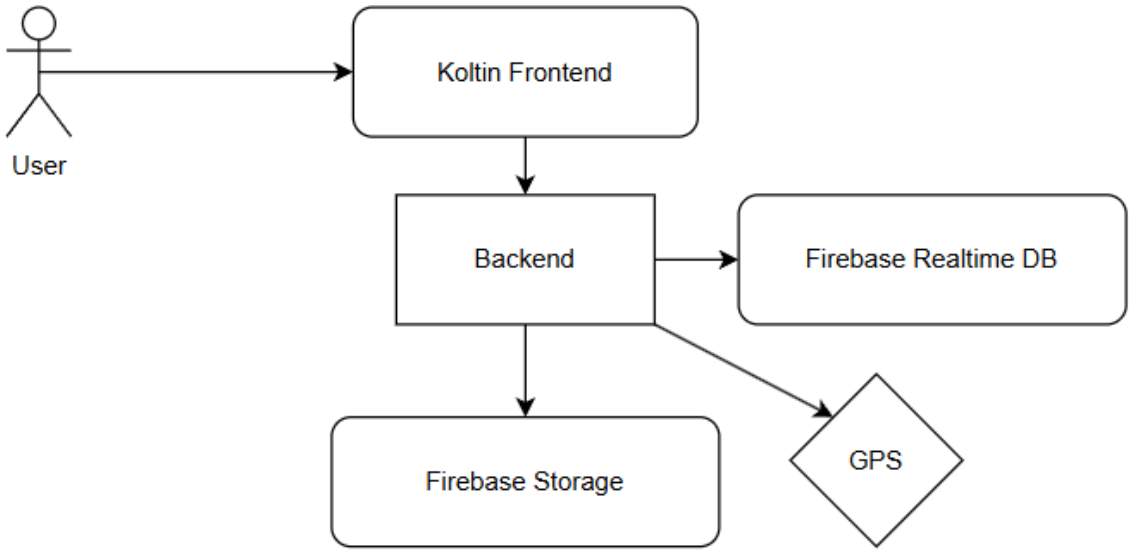


Fig.No.1 Architecture Diagram

REQUIREMENTS

Hardware Requirements

- Processor: Intel i5 or higher
- Speed: 2.5 GHz or higher
- RAM: Minimum 8 GB (Recommended 16 GB)
- Hard Disk: Minimum 256 GB SSD
- Test Devices: Android phones with GPS and camera

Software Requirements

- Operating System: Windows 10/11, macOS, or Ubuntu
- IDE: Android Studio Arctic Fox or later
- Programming Language: Kotlin 1.6+
- Firebase Services: Realtime Database, Storage, Auth
- Android SDK: API Level 26 or higher

USE CASE DIAGRAM

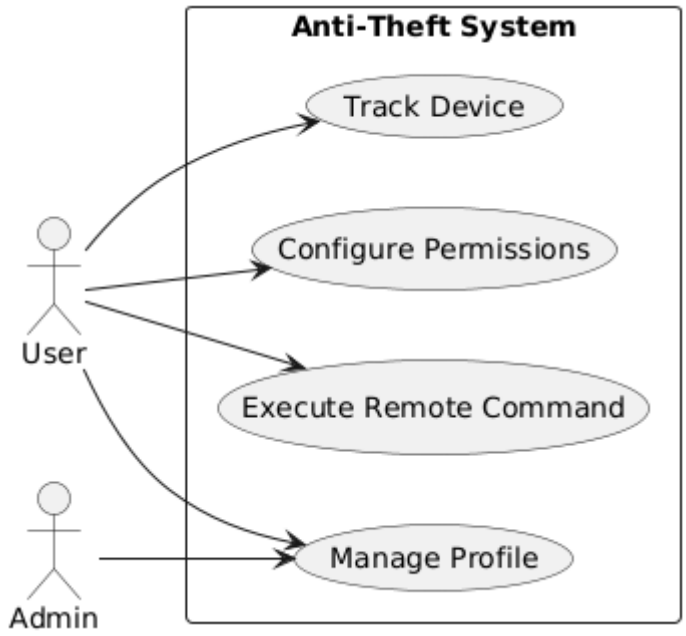


Fig.no.2 Use Case Diagram

MATHEMATICAL MODEL

Input

$I = \{i_1, i_2, i_3\}$

Where:

- **i_1** = GPS Location Data
- **i_2** = Captured Image from Front Camera
- **i_3** = Remote Command (e.g., Ring, Locate, Capture)

Output:

Let

$O = \{o_1, o_2, o_3\}$

Where:

- **o_1** = Location Sent to Registered Email or via SMS
- **o_2** = Thief’s Image Sent to Registered Email
- **o_3** = Alarm/Buzzer Activated on Device

Failures

1. A huge database can lead to more time consumption to get the information.
2. Hardware failure.
3. Software failure.

APPLICATIONS

Personal Device Recovery: Individuals can locate lost or stolen smartphones, ring them even on silent mode, or capture a photo of the surroundings to aid recovery.

Family Safety: Parents can track the whereabouts of children’s devices in real time and ensure their safety, with the ability to trigger an alarm if the device enters an unsafe area.

Corporate Asset Management: Companies issuing mobile devices to employees can monitor device locations, enforce compliance with corporate policies, and remotely lock or wipe devices if lost.

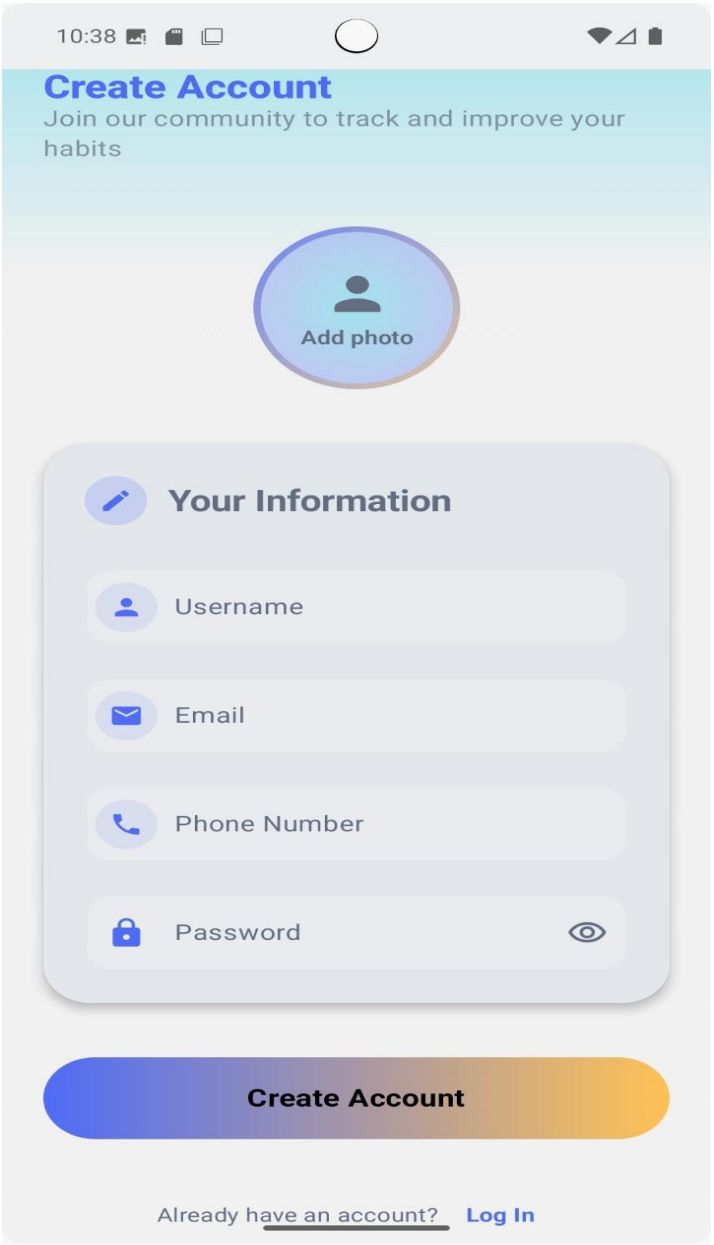
Elderly Care: Caregivers can keep track of vulnerable adults’ devices, triggering notifications or alarms if the person wanders outside a safe zone.

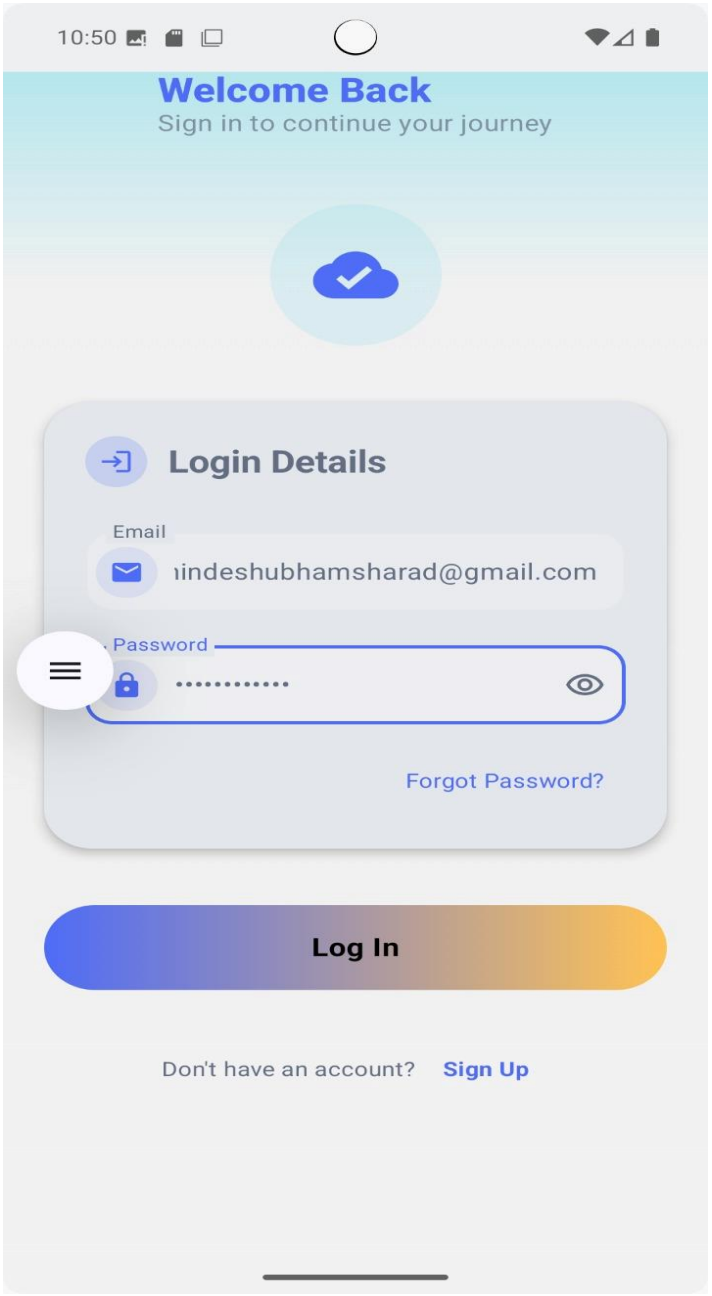
Field Operations: On-site technicians, delivery personnel, and other field workers can be monitored for location-based dispatching, and their devices remotely managed in case of theft

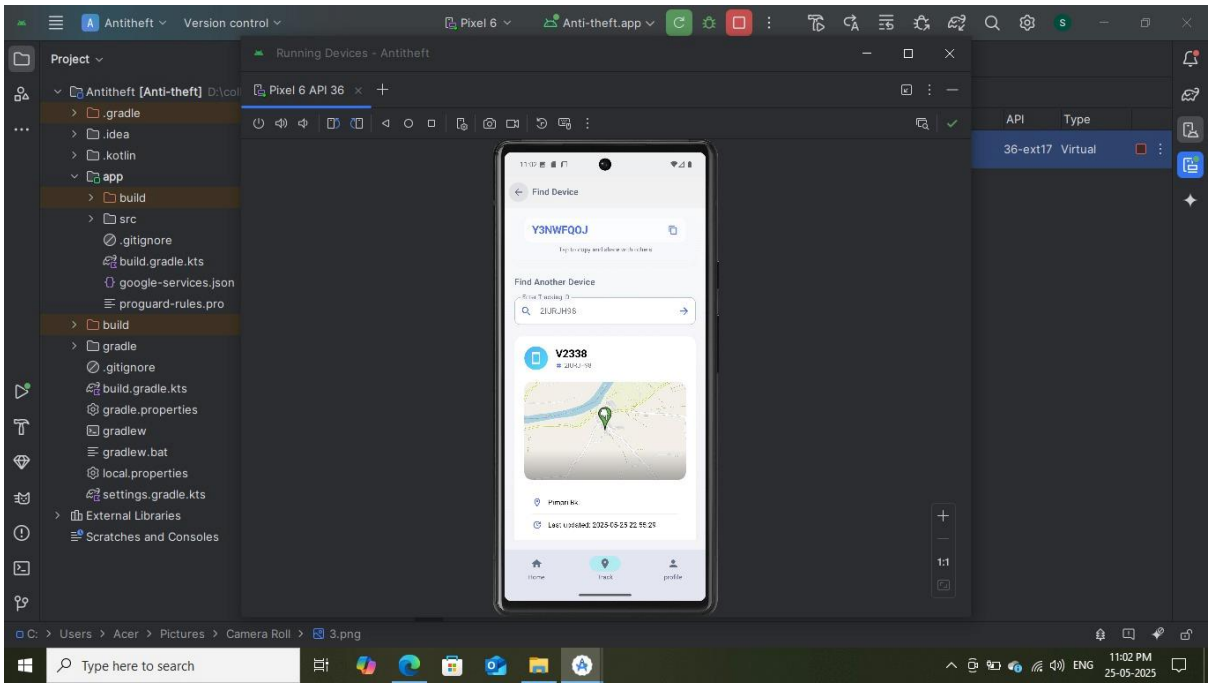
RESULT

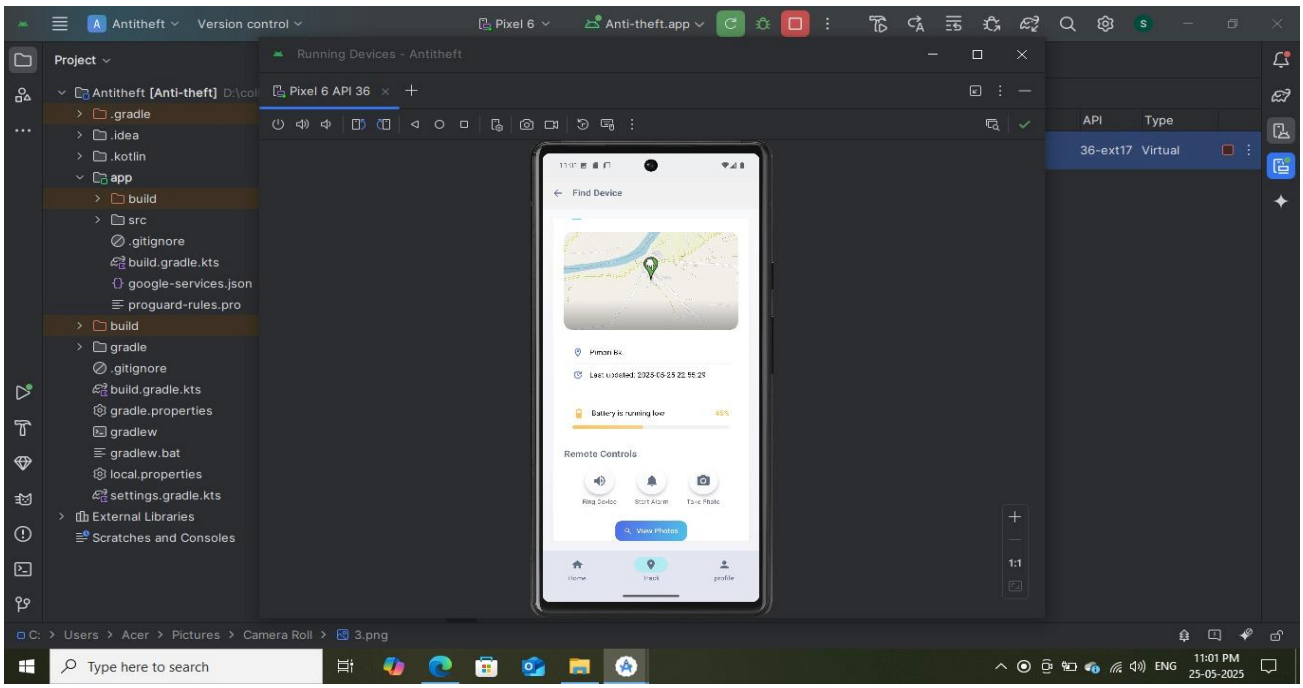
The proposed system offers a comprehensive solution for locating and recovering lost or stolen Android devices using real-time GPS tracking and remote control features. Once installed, each device generates a unique Tracking ID and automatically reports its live location, battery status, and timestamped data to Firebase Realtime Database, even in the background.

Result Screenshots




10:50
Welcome Back
Sign in to continue your journey
Login Details
Email
ıindeshubhamsharad@gmail.com
Password
Forgot Password?
Log In
Don't have an account? Sign Up





Key Features

1. **Real-Time Location Tracking.**
2. **Remote Command Centre.**
3. **Tracking ID Management.**
4. **User Profile Management.**
5. **Permissions Battery Optimization.**

CONCLUSION

The proposed Anti-Theft Mobile Tracking Application is a reliable and cost-effective solution for enhancing smartphone security in cases of theft or loss. It provides real-time location tracking by automatically enabling GPS and sending the device’s location to the user's email or via SMS if

internet is unavailable. The app also captures photos of the thief and emails them to the user, aiding in identification and recovery. It can detect unauthorized SIM changes using the SIM's unique ID and allows remote access to the stolen phone without alerting the thief. Additional features include triggering a buzzer for quick identification and helping users recover important data. The app is easy to install on Android devices and also supports parental tracking to monitor children’s locations. Overall, it combines location tracking, remote control, and theft detection to offer strong protection and peace of mind.

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