Anti-Theft Android Application: A Practical Research Study

Puja Devare[1], Jagdish Patil[2], Pratik Patil[3], Prof. Priya Patil[4]
[1,2,3]UG Student, Dept. of Computer Engineering, KCE's Collage of Engineering and Management, Jalgaon
[4]Assistant Professor, Dept. Of Computer Engineering, KCE's Collage of Engineering and Management, Jalgaon, India.
Computer Science / Information Technology

Abstract- In today's digital world, smartphones have become an essential part of our daily lives. They store personal photos, banking details, passwords, documents, and official information. If a phone is lost or stolen, it may cause serious financial and privacy problems. This research paper presents the design and development of an Anti-Theft Android Application that helps users protect their devices and personal data. The application provides features such as real-time GPS tracking, remote locking, alarm activation, SIM change detection, and remote data wiping. The main objective of this system is to improve mobile security in a simple, effective, and user-friendly manner.

I. INTRODUCTION

Smartphones are widely used for communication, online transactions, social networking, education, and business activities. As smartphone usage increases, mobile theft cases are also increasing. Traditional security methods like PIN or password are sometimes not sufficient to prevent misuse. Therefore, there is a need for a smart security solution that allows users to control and track their devices remotely. The Anti-Theft Android Application is designed to provide additional protection by using internet and SMS-based commands.

II. LITERATURE REVIEW

Several studies in the field of mobile security suggest that GPS-based tracking systems are effective for locating lost devices. Cloud computing technologies allow users to access device information remotely. Recent research also highlights the use of Artificial Intelligence to detect suspicious activities on mobile devices. The Android operating system is widely preferred for development due to its flexibility, large user base, and strong security support.

III. SYSTEM ARCHITECTURE

The proposed system follows a three-layer architecture. The Presentation Layer provides the user interface where users can configure security settings and monitor alerts. The Application Layer handles core functionalities such as GPS tracking, remote locking, alarm activation, and authentication. The Database/Cloud Layer stores user credentials, device information, location history, and activity logs securely.

IV. KEY MODULES OF THE SYSTEM

- User Authentication Module – Ensures secure login using password, PIN, fingerprint, or face recognition.
- GPS Tracking Module – Provides real-time location tracking of the device.
- Remote Lock and Alarm Module – Allows users to lock the device and trigger an alarm remotely.
- SIM Change Detection Module – Sends an alert message when a new SIM card is inserted.
- Data Protection Module – Enables remote deletion of sensitive data to prevent misuse.

V. TECHNOLOGY STACK

- Front-End: Android XML and Jetpack Compose
- Back-End: Java or Kotlin using Android SDK

- Database: Firebase or SQLite
- Cloud Services: Firebase Cloud Messaging (FCM) and Google Cloud Platform

VI. ADVANTAGES OF THE SYSTEM

- Provides real-time tracking of lost or stolen devices.
- Allows remote locking to prevent unauthorized access.
- Protects personal and financial information.
- Sends alerts in case of suspicious activity.
- Increases the possibility of recovering the device.

VII. CHALLENGES

The application may consume additional battery power due to continuous GPS usage. Internet connectivity is required for real-time tracking. There may be privacy concerns related to location monitoring. In some cases, skilled attackers may attempt to uninstall or disable the application.

VIII. FUTURE SCOPE

Future enhancements may include AI-based theft detection, automatic intruder photo capture, advanced face recognition systems, integration with IoT devices, and improved offline tracking mechanisms. These improvements can make the system more intelligent and reliable.

IX. CONCLUSION

The Anti-Theft Android Application plays a significant role in enhancing smartphone security. It helps protect users from data loss, privacy breaches, and financial risks. With features such as GPS tracking, remote locking, and data wiping, the system provides a practical and efficient solution for mobile device protection.

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