Track-Me

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Abstract. This project aims to develop an SMS-based remote control system for mobile devices, addressing the limitations of existing internet-dependent solutions. The system will enable users to perform critical tasks such as retrieving contacts, locating their device, and changing sound profiles through SMS commands. By focusing on simplicity and accessibility, the proposed solution ensures that users can remain connected and in control of their devices, even when they lack internet connectivity or have limited access to advanced technology. The system will be designed with user security and privacy in mind, ensuring that only authorized users can trigger these actions.

Keywords. Enable remote access via SMS, Contact retrieval, Enhance security, user friendly interaction.

1 INTRODUCTION

In today's digital age, mobile devices have become essential tools for personal and professional communication. However, situations arise where users may lose their phones or leave them behind, making it difficult to access critical information or control their device remotely. Existing solutions often rely on internet connectivity or advanced technology, which may not be available in every scenario. There is a pressing need for a reliable and straightforward solution that allows users to interact with their phones using basic SMS functionality. This solution should enable users to perform essential tasks such as retrieving contacts, locating the device, and changing sound profiles, ensuring they remain connected and in control, even without access to the internet or advanced tools.

1.1 Objectives

Enable Remote Access via SMS: Provide users with the ability to control their phone through SMS, regardless of internet connectivity.

Simplify Retrieval of Contacts: Allow users to retrieve important contact numbers by sending an SMS command.

Enhance Phone Security: Offer features like remote locking to enhance the security of lost or unattended devices.

Ensure User-Friendly Interaction: Design the app to be intuitive, allowing users of all technical levels to utilize its features effectively.

Operate Independently of Internet: Ensure that all functionalities of the app work purely through SMS, making it reliable in all network conditions.

2 LITERATURE SURVEY

Current methods focus on leveraging SMS and GSM technology for remote control and automation purposes. However, the major limitation across current applications is their reliance on GSM network coverage, which may limit functionality in areas with weak signals. Additionally, these systems may struggle to scale or adapt to more complex tasks without further development, and the use of SMS introduces potential delays that could impact real-time performance., they suffer from several limitations:

2.1 Limited Scope

The project is designed to control simple appliances and may not scale easily to more complex automation needs without additional development.

2.2 Scalability

The system is primarily designed for small setups (like a few home appliances), and scaling it to a larger system may require significant changes in the hardware and software

2.3 Energy Efficiency

While SMS is energy-efficient, the system's reliance on GSM networks may limit its efficiency in handling multiple devices and complex operations.

Limited Functionality Without Internet While the application can function without an internet connection, certain features like geocoding (translating between street addresses and coordinates) require internet access. This could limit the application's functionality in offline scenarios.

Existing projects are highly functional for basic home automation and location tracking tasks but are limited by their dependence on SMS technology, GSM network availability, and the need for more advanced features.

3 PLATFORM DEVELOPMENT

Journal	**Paper Title**	**Author(s)**	**Limitations**	**Observations**
IEEE (Institute of Electrical and Electronics Engineers)	Embedded system for home automation using SMS	Sougata Das, Rishabh Das, Nilava Debabhuti, Sayantan Dutta	The system is limited to controlling home appliances and does not cover broader mobile device functionalities.	Demonstrates the feasibility of using SMS for remote control but is limited to specific use cases like home appliances.
IJMSR (International Journal of MC Square Scientific Research)	SMS-based mobile remote control for an intelligent home	S.Amudha Mary, N.snehalatha	The system focuses primarily on security functions (locking and wiping) and does not include features like GPS tracking or contact retrieval.	Effective for improving mobile security through SMS-based commands but lacks comprehensive remote management features.

IJCST (International Journal of Computer Science Trends and Technology)	Design and implementation of an SMS based location tracking system	N. Rupesh Babu , Dr. Y. K. Sundar Krishna	The system is focused on tracking vehicles and may require significant adaptation for personal mobile devices.	Highlights the potential of SMS for location tracking, with a primary focus on vehicle tracking that can be extended to mobiles.

3.1 Frontend

Built with HTML, CSS, JS, the frontend offers a responsive, dynamic user interface which allows for efficient updates about schedule messages, and view logs.

3.2 Node.js

The core platform for server-side development, offering fast and scalable backend operations. It efficiently handles asynchronous tasks, ideal for SMS communication and high-volume requests.

3.3 Express.js

A lightweight framework for Node.js, simplifying route handling and API development. It streamlines the creation of RESTful APIs, perfect for integrating SMS gateways.

3.4 Database

A NoSQL database used to store user information, SMS logs, and transaction history. MongoDB is known for its scalability and flexibility, making it a good fit for applications that handle a large volume of data and need quick access times.

4 SYSTEM DESIGN

SMSListener : Listens for incoming SMS messages. When an SMS is received, it checks the format and processes commands.

Command Processor : Once the SMSListener detects a valid SMS, the Command Processor handles the execution of commands like retrieving contacts, changing profiles, and locking the device.

ProfileManager : Manages the phone’s sound profile, allowing users to switch between silent, vibrate, and normal modes via SMS.

LocationManager : Retrieves the phone’s location and sends it back to the user via SMS.

ContactManager : Fetches contact details from the device's contact list based on the contact name provided in the SMS command.

PhoneLocker : Locks the phone remotely, ensuring the security of the device if it’s misplaced or lost.

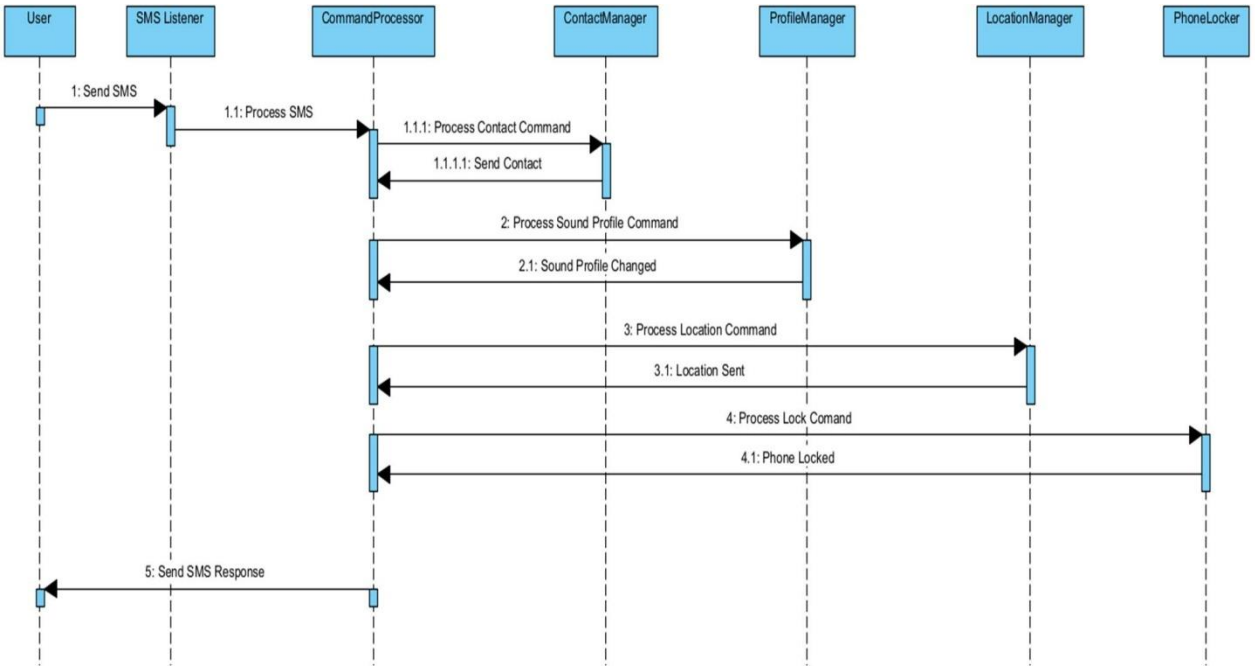

FIGURE 1: Sequence Diagram

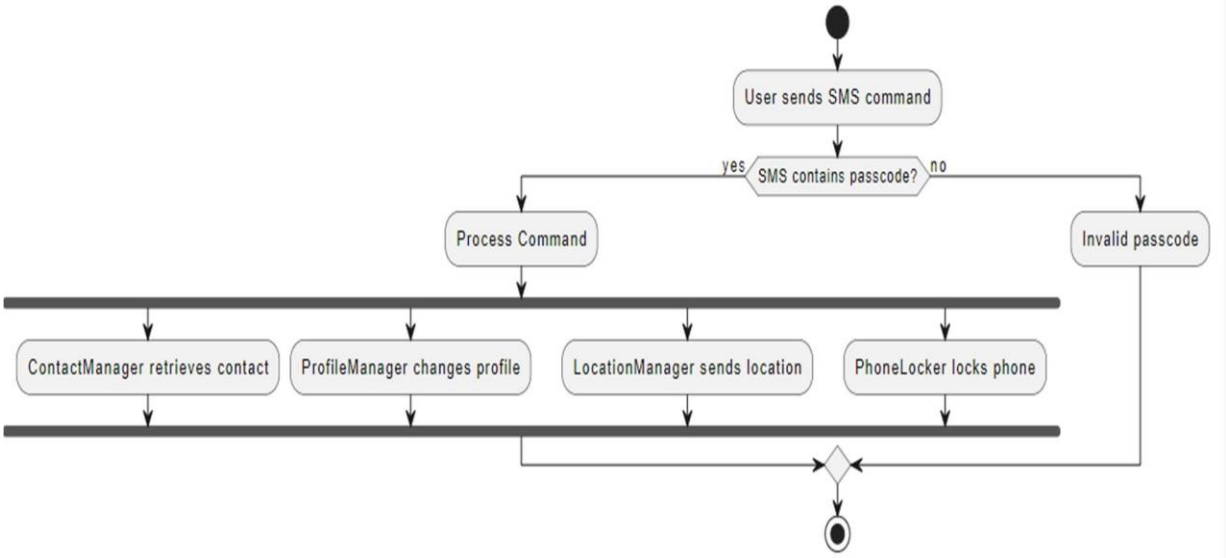

FIGURE 2: Activity Diagram

5 RESEARCH METHODOLOGY

A structured methodology was followed to ensure thorough development and testing:

5.1 Data Collection

Data from potential users was gathered, processed, and organized within the database, ensuring users have access to accurate and comprehensive information.

5.2 Platform Development

The application was developed in several phases:

1. Initial Setup:

HTML and CSS were used to establish the basic application structure and layout, focusing on a user-friendly interface.

2. Location-Based Services

GPS integration allowed the facility locator to provide users with accurate location data.

3. Event-Driven Architecture

Node.js is event-driven and asynchronous, which suits the development of scalable applications, especially those handling many simultaneous requests (such as SMS-based services).

4. Modular Design

The separation into controllers, routes, and public assets indicates a modular architecture that separates concerns, making the app easier to maintain and scale.

5.3 Testing and Debugging

Conduct testing to ensure the app works correctly under different conditions:

1. Functional Testing

Ensure each feature (e.g., retrieving contacts, location tracking) works as intended.

2. Security Testing

Validate that unauthorized users cannot access the app's functionalities.

3. Performance Testing

Test the app under offline conditions to ensure smooth performance.

5.4 Deployment

Once the application is tested, deploy it on Android devices. The deployment should target a range of Android versions to maximize compatibility. After deployment, monitor the app's performance in real-world scenarios. Gather user feedback, address bugs, and update the app with new features or security patches as necessary.

6 RESULTS AND DISCUSSION

Prototype Testing: Evaluations with a sample group revealed positive feedback on the platform's usability. The majority of users reported a positive experience, particularly appreciating the user- friendly interface and quick access to functionalities. Most users reported that the application significantly improved their ability to find their devices, contact retrievals and tracking locations of their mobiles.

Comparative Analysis: The Track–Me application offers a more integrated and user-centric experience than other SMS based control systems. The centralized repository of regulations was a unique feature that made information more accessible.

Impact: The application facilitates quick and reliable SMS communication, allowing users to send and receive messages in real-time. This immediacy fosters better communication among individuals and organizations. The SMS application can improve access to information and services, particularly for underserved communities or populations with limited access to the internet. SMS remains a widely used form of communication in areas with low internet penetration.

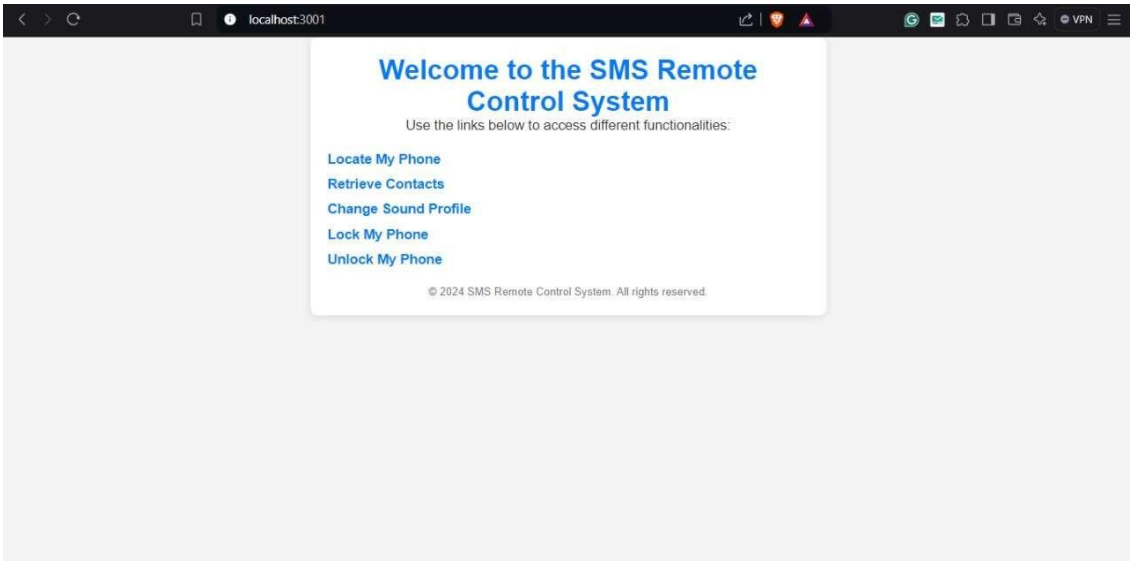

FIGURE 3: Home page of Track-me Application

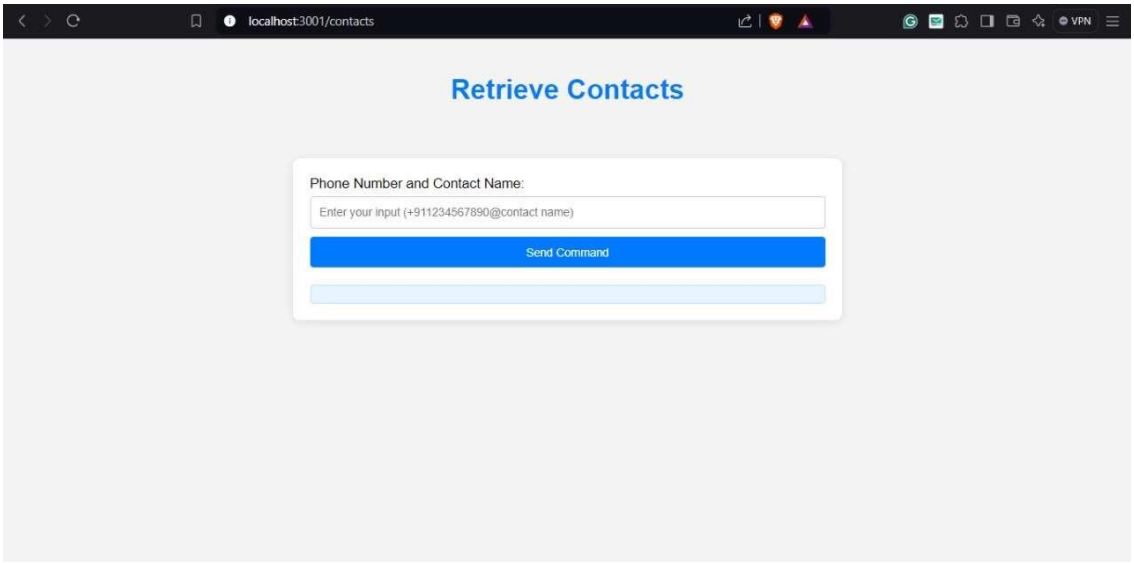

FIGURE 4: Retrieve Contacts webpage

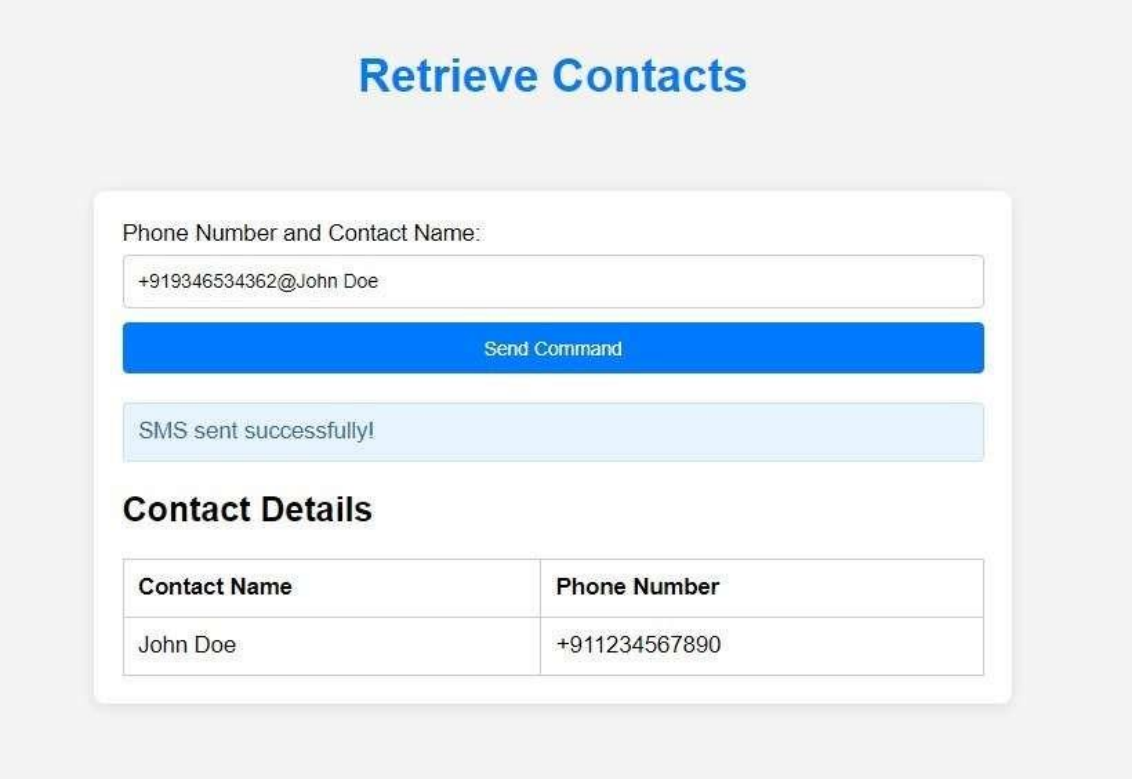

FIGURE 5: Retrieval of Contact as per User request

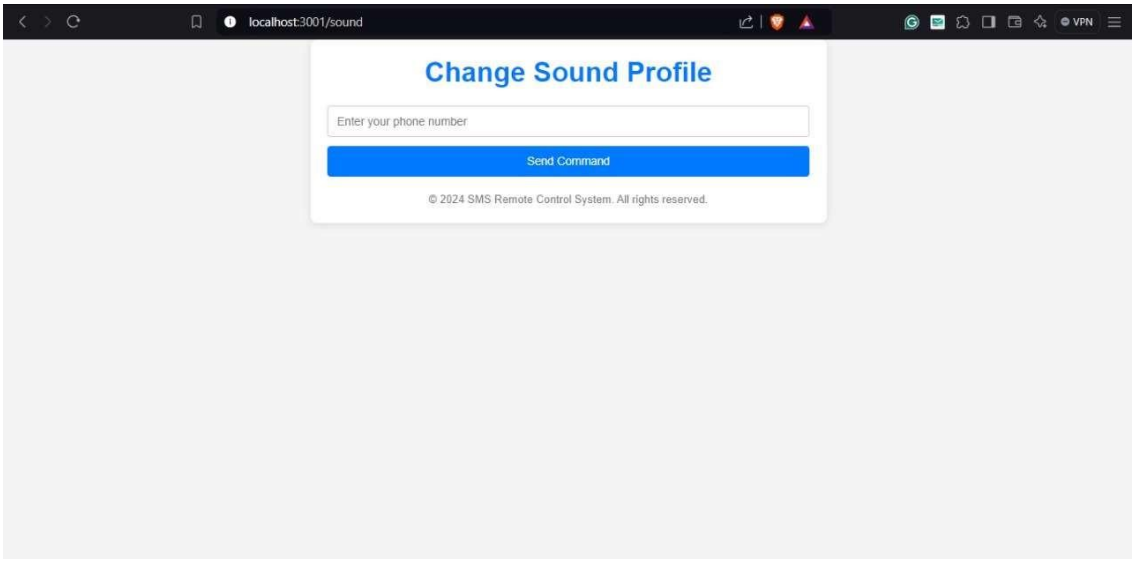

FIGURE 6: Sound profile Web page

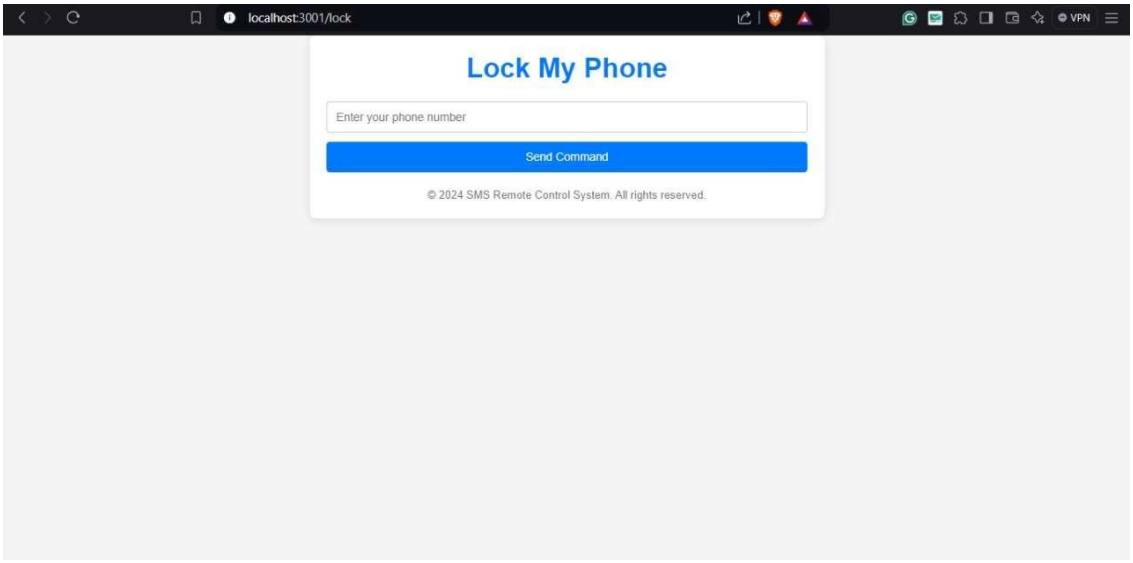

FIGURE 7: Phone locking web page

7 CONCLUSION

Track-Me is an SMS- based application can used by any Android Phone to get full access to your phone. Any phone with basic SMS feature can be used to access your phone. Suppose your phone got lost or you forgot your mobile at your home then you can do following -

1. You can get contact numbers from your phone contacts by sending message in specific format to your mobile number then your mobile will send you contact number.
2. A SMS can help you change the sound profile of your phone (silent to normal).
3. It help you to get location of your mobile.
4. It can lock your mobile if mobile doesn't have. And many more.

DECLARATIONS

Study Limitations: Limited User data may affect coverage.

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