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Smart Medicine Box

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Abstract: The Medicine Smart Box is a helpful device and app designed to make managing daily medicines easier and safer for patients and their caregivers. With the Android app, users can add their medicines, set reminders to take each dose on time, quickly save medicine details like expiry dates. The app keeps an eye on these dates and alerts users before any medicine expires, so they don't accidentally take old medicine. It also tracks how much medicine is left and sends alerts when supplies are running low, helping people remember to refill their medicines on time. This is especially useful for elderly people or those with long-term health needs. The smart box itself has an emergency button that, when pressed, sends a quick alert via SMS to the user's family, so help can come fast if needed. Overall, the Medicine Smart Box and app help people take their medicines properly, avoid expired drugs, keep track of their medicine supply, and get emergency help if necessary making healthcare safer and easier for everyone.

Key Words: Medication Management, Expiry Date Tracking, Reminder Alerts, Stock Monitoring, Emergency Assistance.

INTRODUCTION

Taking medicines regularly and on time is very important for staying healthy, especially for people with ongoing health problems or elderly patients. But it can be hard to remember when to take each medicine, check if any medicine is expired, or know when to buy more. The Medicine Smart Box and its Android app are designed to solve these problems by helping users manage their medicines easily and safely. This smart system lets users add their medicines, set reminders for each dose, and even It also alerts users when medicines are about to expire or when their stock is running low. In case of emergencies, the smart box has a button that sends an alert to family members instantly. Together, these features make sure users take the right medicines on time, avoid expired ones, and get help quickly if needed

LITERATURE SURVEY

1. Nawal Chanane, Farhaan Mirza, M. Asif Naeem "Co-Designing a Medication Notification Application with Multi-Channel Reminder,"[1] 2023 - This paper focuses on designing a medication reminder app by involving users in the design process to understand their needs better. The research highlights the importance of multi-channel notifications, such as push notifications, SMS, and emails, to ensure users receive timely medication reminders through their preferred communication method. The study also emphasizes the ease of adding and managing medications, including dosage details and timing. The app allows users to acknowledge when they have taken their medicine, which helps track adherence
2. Ziyu Lv, Feng Xia, Guowei Wu, Lin Yao, Zhikui Chen et al, "iCare: A Mobile Health Monitoring System for the Elderly ,"[2] 2020 – The iCare system integrates wireless body sensors with smartphones to provide continuous health monitoring for elderly patients. The system collects vital signs like heart rate and blood pressure and sends data to caregivers and healthcare providers in real- time. or medical professionals in critical

situations. The mobile app also includes medication reminders and tracks patient activity to ensure compliance with treatment plans. iCare addresses common challenges faced by elderly users, including forgetfulness and limited mobility, by providing an easy-to-use platform that connects patients with their caregivers seamlessly.

3. Ray Hashemi, Les Sears, Azita Bahrami, "An Android Based Medication Reminder System: A Concept Analysis Approach,"[3] 2021 - This paper explores an Android-based system designed to simplify medication management using image processing technology. Users can take photos of medicine labels, and the system automatically extracts important information such as medicine name, dosage, and expiry date. This reduces manual data entry and errors. The app then sets up reminders for each medication dose based on the extracted data. The approach also includes notifications for upcoming doses and alerts for expired medicines. The research highlights the advantages of integrating image recognition with mobile health apps to enhance accuracy and user convenience
4. P. Suresh, A. Kumar, S. Karthikeyan et al, "Smart Medication Reminder and Management System Using IoT ,"[4] 2020 - TThis study presents a smart medication reminder system based on Internet of Things (IoT) technology. The system uses sensors embedded in a smart pillbox to detect when medicines are taken. The device sends notifications to the user's smartphone app to remind them of upcoming doses. Additionally, the system tracks medicine stock levels and sends alerts when supplies are low. Caregivers can also monitor medication adherence remotely through the app. The integration of IoT enables real-time data collection and communication, providing a comprehensive medication management solution for patients with chronic illnesses or those requiring regular medicine intake.

METHODOLOGY

The Medicine Smart Box is a smart healthcare solution designed to assist patients, particularly the elderly and those managing multiple prescriptions, in maintaining proper medication adherence. It combines a mobile Android application with a hardware-based smart pillbox, making daily medicine routines more manageable and error-free. Users or caregivers can input medicine names, dosages, and scheduled times into the app. At each scheduled interval, the app sends a notification to the user as a reminder to take the correct medicine. This helps prevent missed or double doses and reduces the risks associated with poor medication habits. The smart pillbox contains separate compartments for different medicines, each corresponding to specific time slots. This setup allows for efficient tracking of daily dosage compliance. In addition to reminders, the system features an emergency button on the pillbox. If the user feels unwell or needs urgent assistance, pressing the button sends an alert—via SMS or notification—to a pre-set emergency contact like a caregiver or family member. This enhances safety by enabling quick responses during medical emergencies. The IoT integration ensures smooth communication between the app and the hardware, providing real-time updates and improving overall reliability. The Medicine Smart Box not only supports medication adherence but also gives peace of mind to families by ensuring their loved ones are safe and monitored.

OBJECTIVE

1. To remind users to take their medicines on time using mobile notifications and a smart pillbox.
2. To send instant alerts to family members or caregivers when the emergency button is pressed.
3. To allow users or caregivers to easily add, manage, and schedule medicines through a user-friendly Android app..
4. To make power usage low and conservation more effective.
5. To help elderly people and patients with long-term conditions manage their medications independently and safely.
6. To track and log medicine intake history, enabling better monitoring of adherence and sharing reports with healthcare professionals if needed.
7. To ensure reliable communication between the smart pillbox and mobile app using IoT technologies for seamless real-time operation and updates.

PROBLEM DEFINATIONS

Many people have trouble remembering to take their medicines on time, which can affect their health. They also often don't know when their medicines have expired or when they need to buy more. This can lead to taking expired medicines or running out of important drugs. In emergencies, patients may not be able to quickly call for help, which can be dangerous. There is a need for a smart system that can remind people to take their medicines, track expiry dates and stock levels, and provide quick emergency alerts to family members

FUCTIONAL REQUIREMENTS

1. Users must be able to add medicine details.
2. The system should allow users to set and receive reminders for each medicine dose at specified times.
3. The app should track expiry dates of medicines and send alerts when medicines are near expiration.
4. When the emergency button on the smart box is pressed, the system must send an SMS alert to pre-configured family contacts immediately.

NON-FUNCTIONAL REQUIREMENTS

1. The app should have a simple, intuitive design suitable for elderly users and those unfamiliar with technology.
2. The system must reliably deliver reminders and emergency alerts without failures or delays.
3. All user data, including medicine details and emergency contacts, must be securely stored and protected from unauthorized access.

APPLICATIONS

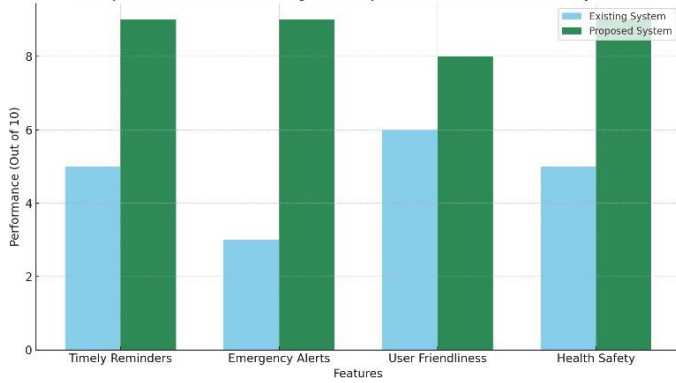
Home Healthcare – Helps elderly or chronic patients manage medicines at home.

Caregiver Support – Assists caregivers in tracking patients' medication schedules

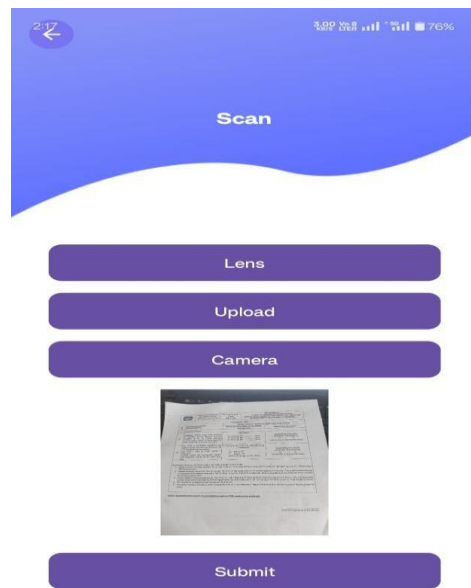
Hospitals and Clinics – Can be used to ensure patient compliance during treatment

COMPARISION WITH EXITSING SYSTEM

Comparison Between Existing and Proposed Medicine Reminder Systems



WORKING MODELS



Detected Text:
A2
SI
A
ESC
FRILOCK
BPE-QUALIFICATION



CONCLUSION

The Medicine Smart Box project offers a smart and effective way to help people take their medicines on time and stay safe. By combining an Android mobile app with a hardware-based smart pillbox, the system ensures users receive timely reminders for medicine intake and alerts during emergencies. This project is especially helpful for elderly individuals and chronic patients who often forget to take their medication. Overall, it improves treatment adherence, reduces health risks, and gives peace of mind to both users and their families

FUTURE SCOPE

In the future, the Medicine Smart Box can be made even smarter by adding features like voice alerts to remind users, support for managing medicine for more than one person, and smart sensors to detect if the medicine was actually taken. It can also be connected with doctors so they can check if patients are taking medicines properly. Adding basic health tracking like heart rate or blood pressure can turn it into a complete health care tool for daily use. Improved user interfaces with voice or touch-free commands could aid accessibility, while predictive analytics could alert caregivers to health risks associated with non-adherence. Dual connectivity models combining Wi-Fi and cellular networks could enhance reliability in low-connectivity areas. Modular designs could reduce costs by allowing users to select necessary features, and integration with wearable devices could offer a holistic health profile.

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