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A REVIEW PAPER ON SMART MEDICINE REMINDER ROBOT

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ABSTRACT

This innovative Smart Medicine Reminder Robot boasts an integrated automatic alarm system, primarily designed to enhance doctor-patient interactions. Patients no longer need to manually recall their medication schedules; instead, they can effortlessly configure their dosage timing within this alarm system. This versatile system allows patients to set alarms for multiple occasions, including dates and times, and even provides the option to include medication details. Patients will receive their prescribed medications as recommended by their healthcare provider. The system prioritizes a user-friendly interface, ensuring easy navigation for patients. Unlike many existing Medical Reminder Systems that require additional hardware, our proposed solution strives to support medical adherence in a cost-effective and time-efficient manner.

KEYWORDS

Self-triggered Alert, Prompting Mechanism, Treatment Compliance, Medicine Scheduler.

1. INTRODUCTION

In our increasingly stressful lives, anyone can become a patient, whether they are teachers, students, businessmen, housewives, children, or any other individual. Our busy schedules often lead to stress, making us vulnerable to illness. Despite our efforts to maintain good health, it can be challenging for those living alone or temporarily separated from their families due to various reasons to remember their medication schedules. In today's fast-paced world, technology and gadgets, particularly smartphones, have become essential tools for many. Recognizing this, the concept behind our proposed work is to harness technology effectively. Technology plays a vital role in helping us maintain our well-being in various ways. One prevalent issue among patients is forgetting to take their medication in the correct dose and at the designated time. Medication compliance, which involves taking medicine as prescribed by a healthcare provider, is a critical concern. Non-adherence to prescribed medication regimens is a significant problem that has been extensively studied. Research has shown that non-adherence negatively impacts a patient's health and leads to increased healthcare costs. This widespread and costly problem is exemplified by a survey revealing that 45% of adults do not adhere to long-term medication courses, resulting in annual healthcare costs of 100 million dollars.

So, we are introducing a. Smart medicine reminder robot which reminds the patient about their dose of medicine on a particular time through an alarm ringing system which help to recover faster and keep

themselves fit and healthy. Navigation system help the patient to get the contact details of the doctors and hospital so, proper treatment can be provide to the patient. Target audience for this application are those people who forget to take medicine on time. In this application, the user can set an alarm for multiple medicine along with the time and date of the medicine along with the description. A notification will be sent by notification System after setting am alarm. Medication reminder reduce the chances of wrong dosages or missing any medicine. This application can be useful to spread health awareness and in the defence sector.

2. Related Work

Numerous medication systems have emerged, employing various platforms and concepts. The proposed health medication reminder system is tailored to cater to the needs of children. It features a user-friendly interface for configuring medication schedules and issuing timely reminders. User alerts are generated in accordance with the predefined schedule. To ensure medication adherence, this system utilizes sensor technology, radio frequency identification mechanisms, or motion detection technologies. The proposed system also incorporates a medication reminder synchronization system through data synchronization. It centralizes all patient medication data and configures the device for remote management by medical staff.

Prasad B. introduced a free application called 'Medicine Reminder Pro,' which supports up to 15 reminders. These reminders can be configured in either repeating or non-repeating patterns, with a minimum time interval of 1 hour between alarms. Notifications are sent to the patient through alarms, vibrations, or LED indications generated by the system to alert them.

To mitigate medication administration errors, Zao et al. developed the Wedjat Smart Phone Application.

However, there are limitations associated with existing reminder systems. These systems often lack the ability to search for doctors based on specific diseases, and users may not have the option to schedule appointments with doctors. Some systems have fixed alarm sounds that cannot be customized. A major drawback is that scheduled reminders may suggest medication types and dosages automatically, without considering a doctor's input, potentially impacting a patient's health negatively. Lastly, many available systems require complex hardware purchases, adding to the overall cost and complexity of implementation.

3. Description of components:

3.1. Arduino UNO

The Arduino Uno is a microcontroller board built around the ATmega328P (datasheet) microcontroller. It offers a variety of features, including 14 digital input/output pins (with 6 of them capable of serving as PWM outputs), 6 analog input pins, a 16 MHz ceramic resonator (CSTCE16M0V53-R0), USB connectivity, a power jack, an ICSP (In-Circuit Serial Programming) header, and a reset button.

Analog Input Pins: 6
Flash Memory: 32 KB (ATmega328P)

Length: 68.6 mm **Clock Speed:** 16 MHz

Fig. 3.1 Figure of Arduino UNO

3.2. 16*2 Liquid Crystal Display

In today's world, Liquid Crystal Displays (LCDs) have become ubiquitous. These electronic screens are an integral part of various devices such as computers, calculators, television sets, mobile phones, and digital watches, serving as a means to display information, including the time. As the name implies, an LCD screen is an electronic display module that utilizes liquid crystals to generate a visible image. Among the common LCD modules is the 16×2 LCD display, a fundamental component frequently employed in straightforward electronic circuits. The 16×2 LCD can display 16 characters per line across two lines, with each character being represented within a 5×7 pixel matrix.

Fig. 3.2 Figure of Liquid Crystal Display

3.3. RTC DS1307

The DS1307 real time clock (RTC) IC is an 8 pin device using an I2C interface. The DS1307 is a low-power clock/calendar with 56 bytes of battery backup SRAM. The in built clock/calendar provides the data about time like seconds, minutes, hours, day, date, month and year.

Fig. 3.3 Figure of RTC DS 1307

3.4. Buzzer

A buzzer or beeper is a device that produce sound as a signal. The buzzer may be of any type like mechanical, electro mechanical, or piezoelectric. Generally buzzers or beepers are used in devices where some sound signal needs to be generated like in alarm devices and timers.

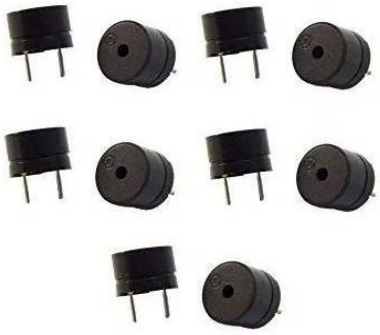

Fig. 3.4 Figure of Buzzer

3.5. IR Sensor

An IR sensor has two parts, the emitter circuit and the receiver circuit. The emitter is an IR LED which converts electrical energy into light energy and the detector is an IR photo-diode which converts light energy into electrical energy. The IR photo-diode is sensitive to the IR light emitted by an IR LED. The resistance and output voltage of the photo-diode changes in proportion to the IR light received.

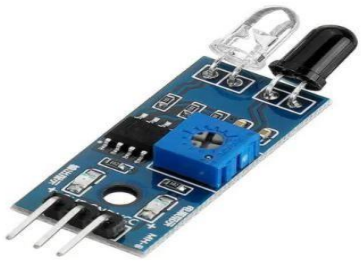

Fig. 3.5 Figure of IR Sensor

3.6. DC MOTOR

DC motors comprise two essential elements: a stator and an armature. Of the two, the stator remains stationary or fixed within the motor, while the armature serves as the motor's movable component. Within a DC motor, the stator generates a rotating magnetic field, which induces the rotation of the armature.

Fig. 3.6 Figure of DC Motors

3.7. Motor Driver

Motor Driver circuits are current amplifiers. In motor drive, they act as a bridge between the controller and the motor. Motor drivers are made up of discrete components which are integrated inside an IC. The major function of the motor driver is to transfer high current signal from the low current signal.

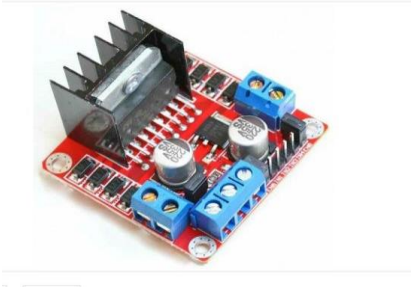

Fig. 3.7 Figure of Motor Driver

3.8. Jumper wires

Jumper wires are the simple wires used for connecting the two points and have connector pins at each end. The pins allow them to be used to connect two points to each other without soldering. Jumper wires used in the circuits are typically used with breadboards and other prototyping tools in order to make it easy to change a circuit as needed.

Fig. 3.8 Figure of Jumper Wires

4. Working principle

We are making a smart medicine reminder project that simply works on the path following system. Our innovation is for sick peoples and old age for there good health. Our system has provided many slots in the machine box in which we must add dozes in a particular box respectively as per medication schedule which will be provided to the patient when he or she is sick.

5. Conclusion:

Numerous Medication Reminder Systems catering to patients of all age groups have been developed across various platforms. Some of these systems rely on specialized hardware devices to alert patients about their medication schedules, which can significantly increase the overall cost. To address this issue and enhance medication adherence while keeping it economical and user-friendly, we present our proposed model.

Ensuring that patients take their medication on time and as prescribed by their doctors is crucial for the effectiveness of their treatment and overall health. Our medicine reminder system offers a comprehensive solution, providing patients with a medication schedule that includes precise timing details, such as start and end dates for each medication. It also offers notification alerts via messages or emails, automatic alarm reminders, and a user-friendly navigation system.

The medications suggested by our scheduled reminders align with the doctor's prescriptions, reducing the risk of incorrect dosages and ensuring patient safety. Additionally, our system enables patients to search for relevant doctors specializing in their specific diseases, saving valuable time in the process. This comprehensive approach enhances the overall efficiency and performance of the system, laying the foundation for potential future enhancements to further improve medication adherence.

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