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A Smart Pill Box with Remind and Consumption Using IOT

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Abstract – *This paper proposes a smart pillbox with remind and consumption function. Which is used to give alert the user to take pills at a particular time and the pills required to take at that time comes out to the user to avoid confusion among medicines. Smart pill box can reduce elderly family member's responsibility towards giving the correct and timely consumption of medicines. This system Get the feedback about pills from the user and Send purchase order to medical shop.*

Key Words: smart pillbox; meditation safety; confusion avoidance among medicines.

1. INTRODUCTION

In day together life, People have trouble to remember the pills they need to take from the bag of medicine. Multiple times the problem is the time required to take medicine is not printed on the box of medicine or they couldn't read English. People have also habit to sometimes forget to take pills. Due to this, some medicines were expired.

Most patients with chronic diseases need to take medications over a prolonged period of time in order to stabilize their conditions. Ensuring that the patients consume the right medication at the appropriate time becomes crucial.

This project deals with the time at particular, the Patient needs to take pills. The timing is set to the system initially reminding and it can be changed by the patient according to his requirement. The system will start alarm at that particular time. To make the user-friendly system, the LCD, and Keypad connected to the system. This helps to change pills time. After having pills, the user must have to put the no. of pills he removed from the box. As, the no. of pills remains very few, the order for the particular pill is sent by the system automatically to medical shop through GSM system. So, it is helpful to user to get the pill at particular time and avoid confusion among pills.

2. RELATED WORK

In [1], a pill box based on a MCS-51 micro-controller was proposed; that pill box can send out medicine using a stepper motor at a scheduled time, but there was no provision to record the time when the patient actually took the medicine. Apart from the abovementioned disadvantages, the other disadvantages of these previous systems are as follows:

•The family members or patients need to fill the medicine in the pill box manually; this is an additional responsibility for family members of the elderly, or even the patients.

•Manually filling the medicine in the pill box may cause the medicine to dampen easily.

In [2], an intelligent pill box (IPB) was proposed. The IPB is based on the medicine bag system, and the IPB sends a medicine bag out of the box at the appropriate time. If the patient does not take the medicine bag away, the IPB would notify the caregivers via Skype. The IPB system improves the interactivity between patient and caregivers, but it works well only if an internet connection is available.

In [3], an electronic pillbox called MedTracker was proposed; in the MedTracker, the time at which each lid was opened or closed is recorded, and transmitted to PC via a Bluetooth link. However, the MedTracker does not provide any remind or confirm functions.

3. PROPOSED SYSTEM

In order to reduce the responsibility of family members of dividing the medications in the pill box, we assume that the medicine the patients need to take at particular times has been packed into the pill box.

In this system we have to set the pill time for required medicine by using input system. We can set the different time for different pills. If the more than one pill is required at a time, give the box nos. to the system to get required pills. We also set the no. of pills we are inserting in the system.

The real-time clock gives continuous time as an output. Monitor the time continuously using a Real-time clock to identify the pill time. If the system time matches with pill time, the system shows that that it is time to take a pill.

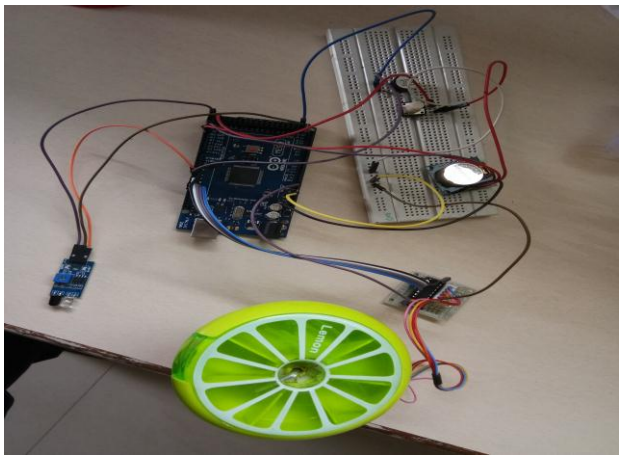

Fig -1: Implementation Of The Proposed System

It is necessary to alert the user to take pills at a particular time. When the system time match with pill time, the buzzer start continuously until the push button is not pressed. When the push button pressed, the buzzer stops and the pills required to take at that time comes out to the user to avoid confusion among medicines.

As pills removed by the user, it is necessary to put the no. of pills removed by the user. Multiple times a user required more than one pills of same medicine or more than one person are using the same system. So it is required that the no. of pills removed by the user.

Age	Gender	Medicine	Dosage Time Of Day
28	Male		
60	Female		
11	Male		

Table -1:Attributes used in ID3 algorithm

The system counts no. of pills in the system by using the total no. of pills and the pills used by the patient. When the no. of pills remains less, the purchase order sends automatically to medical shop.

On the basis of below attribute we are using the ID3 algorithm and to display result. The Architecture of the remind and confirm processes is shown in Fig. 2. At the medication time, the pill box will remind the elderly patients, to take their medication via alert sound, the sound is off only after push button is pressed.

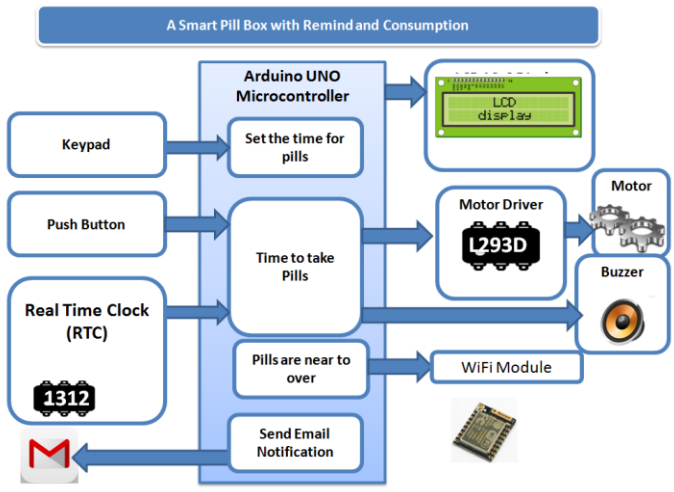

Fig-2 : Architecture remind and consumption using IOT

The medicine required by an elderly patient will out of the box so avoid confusion between tablets. count no pills taken by the patient. The correctness of the medicine thus ensuring that the patient takes the right medicine appropriately. If the patient does not take the medicine, the alert sound is given continuously. And if pills near patient are over message is sent to the near by medical shop.

4. ALGORITHM USED

1. ID 3 ((Iterative Dichotomiser 3) Algorithm

ID3 builds a decision tree from a fixed set of examples. The resulting tree is used to classify future samples. The leaf nodes of the decision tree contain the class name whereas a non-leaf node is a decision node. The decision node is an attribute test with each branch (to another decision tree) being a possible value of the attribute. ID3 uses information gain to help it decide which attribute goes into a decision node.

- Algorithm :

1) Establish Classification Attribute (in Table R)

2) Compute Classification Entropy.

3) For each attribute in R, calculate Information Gain using classification attribute.

4) Select Attribute with the highest gain to be the next Node in the tree (starting from the Root node).

5) Remove Node Attribute, creating reduced table RS.

6) Repeat steps 3-5 until all attributes have been used, or the same classification value remains for all rows in the reduced table.

ENTROPY:

$$H(X) = -\sum_{i=1}^{n} p(x_i) \log_b p(x_i)$$

INFORMATION GAIN:

$$For\ Set\ S\ ,\ Attribute\ A$$
$$Where\ S\ is\ split\ into\ subsets\ based\ on\ values\ of\ A$$
$$\subset_S^A\ = \text{Subset A of S}$$
$$I_E = Entropy\ , \mathrm{p}(\subset_S^A) = \frac{\text{size}(\subset_S^A)}{\text{size(S)}}$$

$$I_G(S,A) = I_E(S) - \sum^{n} (\mathrm{p}(\subset_S^{A_n}) * I_E(\subset_S^{A_n}))$$

5. CONCLUSIONS

To improve medication safety and to avoid confusion in taking tablet among the elderly, this paper proposed a smart pillbox with remind and confirm functions. The proposed pill box can reduce family member's responsibility towards ensuring the correct and timely consumption of medicines. Because the proposed pillbox containing an alert sound to

the user for a particular time and real-time clock gives continuous time as an output.

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