

Smart Medicine Box For Visually Impaired Using ATMEGA328

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Abstract - The appropriate and timely intake of medicines only has its better therapeutic effect. As people grew older, the use of medicines increases for the treatment of ailments that result due to ageing. The old age people face enormous of problems in practising their medication. They experience trouble in reading the user information & understanding it & in removing the packaging. The difficulty in reading arises due to their impaired vision. Hence to overcome these complications the smart medicine box is designed so that the older people may take medicines in right quantity at exact prescribed time. Also the visually challenged persons can devour the pills by hearing to the voice command produced while they open the pill box. By providing this smart medicine box misintake of medicines can be minimised.

Keywords: Visually Challenged, ATMEGA 328, IR Sensor.

I. INTRODUCTION

Food and medicine taken at time gives proper result. But people in their busy schedule eventually forget to take medicine or they don't take medicines at appropriate time. This makes the task of curing a disease more tedious. According to a survey, nine out of ten people who are aged above 75 years are prescribed to take at least one medicine and also 38% of old people take more than four medicines on their daily basis. Also with the optimal increase in Diabetes and Cardio vascular disease the orderly intake of pills has become mandatory. The effects that accompany ageing includes failing of eye sight and memory that causes issues in the intake of medicines. As said earlier, old age people are prone to partial memory loss and hence remembering to take medicines become difficult. A survey depicts that there are 285 million people who are visually impaired. Out of this 39 million people are visually challenged and 246 million have low vision & 90% of them reside in developing countries. These people find it hard to locate the drugs and also in differentiating pill box. Although they may be familiar with size and shape, if suppose there are similar sized capsules for two or more ailments, sometimes there exists misidentification the pills and take in incorrect dosage. Smart medicine box to make it best suited for the elderly people and visually challenged sets an alarm time that is fed into it using the keypad by the nurses or physician. When this alarm time matches the real clock time, the

microcontroller ATMEGA 328 generates an interrupt which in turn causes the LED fixed to the pill box to glow and the voice command to be given through the speaker

II. COMPONENTS USED

A. ATMEGA328

ATMEGA328 is a microcontroller that has 23 I/O lines that facilitates both analog and digital connection from Atmel, also property of mega AVR series. It is widely used in applications where miniaturization is the key consideration. It has an efficient memory and provides 32KB flash, 2KB SRAM and provides data retention for 100 years when maintained at temperature. The additional feature is flash has 10,000 write erase cycles and EEPROM has 100,000 cycles.

B. LIQUID CRYSTAL DISPLAY

The name itself states that it uses a liquid crystal in order to display the arbitrary images. It is based on the principle of blocking light and thereby imparts supreme contrast and provides informative response. In the smart medicine box the LCD is interfaced with arduino to display the time being set. It can be connected to the microcontroller via three selection lines and eight data lines.

C. SPEAKER MODULE

When the alarm time matches with the real time clock, the interrupt generated by the microcontroller activates the speaker module and causes it to produce voice command.

D. KEYS

Keys are used by nurse or physician to feed the time into the device. The alarm time at which the medicine has to be taken is set using the keys. It consists of four keys that are used to increment, decrement and enter the data.

E. IR SENSOR

The IR sensor is sensitive to IR wavelength. The emitter which is an IR LED emits IR at a particular wavelength that has been emitted. In this device IR sensor senses while the box is opened and hence the system can generate the voice command. This assists the visually challenged in identifying the pills.

III. WORKING

As the device is switched on, the LCD displays the time that is running out. Initially it is possible to set alarm timings at which the medicines have to be consumed. When the alarm time matches the current time the microcontroller generates an interrupt which in turn activates the speaker module that gives out the voice command and also the LED fitted onto the pillbox also glows so that the old age people can identify the box by the LED glows. In this system of smart medicine box, it has been devised to produce voice command at the time when the user, most probably the visually challenged people opens the pill box by sensing it using IR sensor placed inside the pill box.

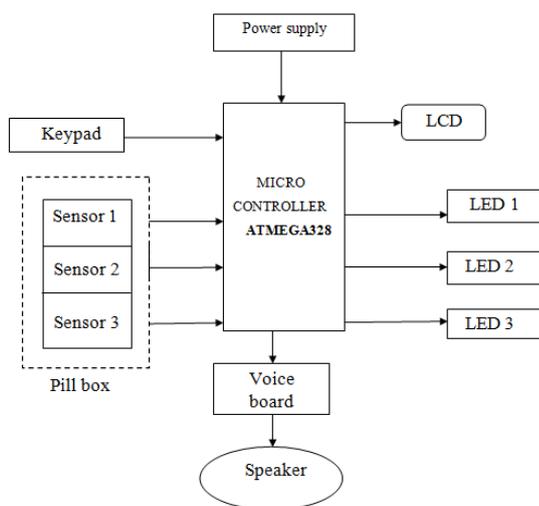


Fig. Block Diagram of Smart Pill Box

IV. CONCLUSION

The earlier system was helpful to the old age people. But now it has been implemented to serve the visually impaired by generating the voice command while they open up the pill box. It is cost effective and this device minimises complexity, thereby it is user-friendly. It promises to work satisfactorily.

V. FUTURE SCOPES

This system can be further extended innovatively even to the audibly challenged and can serve as reminder for caretaker of elder patients. Since the number of people taking medicines is increasing optimally, it can also be used by the younger generation. Further, this project can have its extension in which the pills that has to be taken in a particular time may be made to drop into another opening attached to the posterior portion of the smart pill box.

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