

## Review paper on IoT Driven Smart Pill Box

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Abstract-Our paper main aim is to make a Smart medicine box for those people who regularly take medicines and the prescription of their medicine is very long as it is hard to remember to patients and also for their care giver. Also Old age patients suffer from problems of forget to take pills on proper time or as per the prescription which causes certain health issues for patients having Permanent diseases like diabetes, blood pressure, breathing problem, heart problems, cancer diseases etc. We saw these problems in hospitals & people around us who have such kind of diseases and thus based on these two problems we made smart medicine box which solve these problems by Setting up time table of prescribed medicines through push buttons as given in prescription.. All pill boxes are pre-loaded in the system which patient needs to take at given time. System advancement like blind people take pill from box using vibrator fit to the box. Using IOT no of pill in to box will be monitor by doctor or patient relative.

Keywords: Smart medicine box, Old age patients, Permanent diseases, Setting up time table, Bright light, Notification sound, Sensing capability.

### I. INTRODUCTION

In everyday life most of the people need to take medicines which was not there in past couple of years and the reason behind this is diseases are increasing in large amount. Life span of humans became less because of such diseases and to overcome or to live a better life We need to take advice of Doctor. This problem of committing to take pills at right time, taking wrong medicines and accidentally taking of expired medicine causes health issues of patient and this leads to suffer from unhealthy life. Our assignment be in the direction of made Smart medicine box which uses Real time clock.

### INTERNET OF THINGS:

The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

The definition of the Internet of Things has evolved due to the convergence of multiple technologies, real-time analytics, machine learning, commodity sensors, and embedded systems. Traditional fields of embedded systems, wireless sensor networks, control systems,

automation and others all contribute to enabling the Internet of Things. Eg: Smart Home

Internet of things The Internet of Things (IOT) is an important topic in technology industry, This technology is embodied in a wide spectrum of networked products, systems, and sensors, which take advantage of advancements in computing power, electronics miniaturization, and network interconnections to offer new capabilities not previously possible.

### HOW DOES IT WORK?

Devices and objects with built in sensors are connected to an Internet of Things platform, which integrates data from the different devices and applies analytics to share the most valuable information with applications built to address specific needs. These powerful IoT platforms can pinpoint exactly what information is useful and what can safely be ignored. This information can be used to detect patterns, make recommendations, and detect possible problems before they occur.

### II. OVERVIEW OF SENSOR BASED MECHANISM:

IR SENSOR: An infrared sensor is an electronic device, that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measure only infrared radiation, rather than emitting it that is called a passive IR sensor.

RTC circuit: A real-time clock, or RTC, is an integrated circuit that keeps track of current time. It can keep track of all time from the year down to the second.

BLYNK an Android based application: Using blynk android application patients relative and doctor monitor pill box from all over the world.

### III. LITERATURE REVIEW

Hiba ZEIDAN, Khalil KARAM, Roy ABI ZEID DAOU[1]: In this Paper Two main functionalities characterize this system: safety which assures the wellbeing of the patient and the good functioning of the system. This system can also be monitored by the patient parents as it will be linked to a phone application. This application will be used to configure the medical box by calculating the weight of each pill, setting the schedule of medical intake, alarming the user of the number of remaining pills, generating alarms whenever the patient does not take the required number of

pills or doesn't take them at all, and so on. The overall results were very acceptable with a faulty alarm generation below 3%.

Hsiu-Ling Tsai, Chun Hsiang Tseng, Long-Cian Wang, Fuh-Shyang Juang, Chung Hwa, Jente, Tainan, Huwei, Yunlin[2]: In this Paper A smart pill box (SPB) for the elderly and nursing homes meets the needs of the market by integrating electronic technology and network functionality. This study uses the Webduino module installed in SPB to achieve two-way messaging with remote relatives via internet of thing (IoT). The module first reads the sensing signal in the kit and uses WiFi to transmit the signal to WiFi Router, and then sends the medication information to a remote webpage or cell phone for monitoring (on LCD). After receiving the signal, Webduino will send it to Arduino for text display and voice playback in the SPB. Therefore, the elderly staying in their home or nursing home institution can easily manage their medication via this application. The smart interactive pill box will be crucial for medical care management for elder persons of this aging population or in the future.

Nijiya Jabin Najeeb, Aysha Rimna, Safa KP, Silvana M, Mr. Adarsh TK [3]: In this Paper Central to most aspects of medicine from primary care to specialized treatments, prescription drugs have become a major component of health systems worldwide. Owing to their psychoactive effects, these drugs are often taken in ways not intended by the doctor or by someone other than the person for whom it had been prescribed. patients often forget to take their prescribed medications or consume it out of the schedule recommended by the doctor. There are also instances of teenagers stealing drugs such as opiates, CNS depressants and stimulants from their friends and family. Our goal for this project is to build a system around prescription drugs that helps authenticate a patient's access of such medication based on their identity and prescribed schedule, and also facilitates the pharmacist or doctor to monitor this consumption.

Huai-Kuei Wu, Chi-Ming Wong, Pang-Hsing Liu, Sheng-Po Peng, Xun-Cong Wang, Chih-Hi Lin and Kuan-Hui Tu [4]: In this Paper Population aging is a global issue that affects many developing countries such as Taiwan. The natural decline in physical function with aging leads to an increase in incidences of various chronic diseases in elderly individuals; 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 paper proposes a smart pill box equipped with a camera and based on the medicine bag concept. The matrix bar code printed on the medicine bags is used to interact with the pill box in order to perform pill remind and confirm functions.

#### IV. OVERALL ANALYSIS OF REPORTED WORK:

All the reviewed paper previously has work on the developing smart Pill box using various types of IR sensors, Internet of things using sensor are effective, it decreases the rate of health issue. Here, Smart Pill box uses Internet of things with the use of smart and automated sensor and every actions show on LCD display. With the tremendous growth in medical technology, there is cure for many dreadful diseases through the intake of several new medicines. The number of medicines to be taken by each person has increased. It has become hard for us to remind ourselves to take the medicines at particular time. This Smart Pill Box helps us in reminding us of the medicine that we should take at that particular time. In this Pill Box we uses IOT technology by which this system easily send SMS to the patient mobile number for reminding him/her about medicine.

#### V. PROPOSED WORK

In day to day life, people have trouble remembering the pills they need to take from the medicine bag. Multiple times the problem is that the time required to take the medicine is not printed on the box of medicine or they can't read English. People also have a habit to forget to take the pills. Due to this, some medicines expire. In order to reduce the responsibility of family members, the proposed pill box is of great help by adding required medicine to the pillbox and setting the pill time for that particular medicine. The Real-time clock is used to identify the pill time. If the system time matches with pill time the speaking system start as well as Red colour led start blinking on box. Pill box start vibration. until the push button is pressed after taking the pills. Figure 1 gives the architecture of the proposed system. When the push button is pressed the buzzer stops and the pills required to be taken at that time comes out to the user to avoid confusion among medicines. Multiple times a user requires more than one pill of same the medicine or more than one people are using the same system. So it is required to update the count of number of pills removed by the user it will updated on relative or doctor mobile using android application.

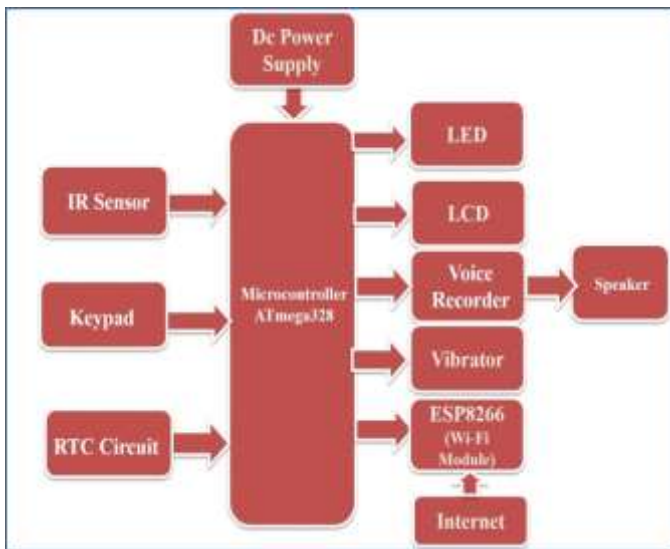


Fig: proposed work block diagram

## VI. HARDWARE & SOFTWARE TOOLS

### A. Following Hardware Tools required:

- Microcontroller Atmega328
- LCD Display
- Voice recorder kit
- Speaker
- Keypad
- IR Sensor
- Dc Power Supply
- Vibrator
- Led
- RTC Circuit
- Esp8266 Wi-Fi module

### B. Following Software Tools required:

- PCB Artist for PCB Design
- Atmel studio 6.0 Compiler
- Proteus for Circuit Design
- Blynk Android Application.

## VII. CONCLUSION

The goal of our project is to provide healthy and tension free life to those users who are taking regularly pills and to provide this product at affordable cost also. Our project is also reusable by exchanging those other medicine box that has only alerting system and are non-usable or unaffordable compare to our product.

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