Internet of Things (IoT) Based Smart HealthCare Medical Box for Elderly People

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Abstract

Here, the healthcare field is uninspiring in taking over IoT (Internet of Things) than the other fields, IoT(Internet of Things) in the medical field aims to keep the people safe, secure and healthy in which the main intention of our project is to step-down the cost of healthcare in the upcoming future. IoT based smart healthcare system has been advised here, which will hold an intelligence medicine box affiliated with sensors and servers for usual health supervising. The smart medicine box which is having wireless internet connectivity will help the patients to get easy communication between the doctor and the patient without influencing physically and also to get regular health checkup . This advised medicine box assists the user/patient to use up the exact medicine with an email at the exact time which will facilitate the patients to take the medicines. A laptop is used to store the elaborate data about the doctor and the patient along with the prescription and designation date. Here, the laptop is used as a server. Both the doctors and the patients will have their unique IDs' and passwords for approaching the server. For the doctor's comfort, the temperature and the medication information of the patients are stored on the server. The patient's prescription can be modified by the doctors if essential or in the serious condition, which will also be advised through the email. Furthermore, the doctors can take quick actions in the case of an exigence.

Keywords- Internet-of-Things (IOT), smart   medicine box, server, remote observation, Health- IoT

I. INTRODUCTION

The life expectancy of the human has been increased because of the advances in the medicines. For most of the instances patients will forget to take the medicines at the prescribed time. As a result the expected remedy becomes very difficult for the elderly people to follow a medicine who has insufficient knowledge.The people who need to take lots of medicines daily will find it difficult to remember the time and medicine details. For those people, medicine intake at the right time is the very most important thing. Home healthcare plays a major role in reducing the consumption of treatment. People can get the services easily through advanced health care technologies. Through IoT, we can   provide better treatment because medical fields are more functional than other fields. So IOT is a hope in the healthcare fields. In real time monitoring patients can improve their quality of health.

Disease management,fitness and health education, we can get information through mobile apps.Now a days the IOT based medical components/equipment and medicine monitoring systems have become very comfortable. The history of the patient's disease can be stored in the server which has become very easy which inturn helps in storing/recording the history of the patient's family . It can also help in providing improved and better treatment to the patient by the doctor. To help the people there are a lot many techniques, projects and researches in the present world. There are many projects which are designed based on Microcontroller, IOT, RFID and some other techniques which will create awareness of the medicines to the patients in the proper time by providing some information based on their medicines.

II. LITERATURE SURVEY

[1] In this proposed system the medical professionals will be monitoring/controlling the patients health through the smartphones which is based on loT. Here, we are using the Radio-Frequency Identification technique which is one of the core technologies of IOT. In this project we are using different types of sensors. Each sensor will do their specific jobs in different ways which will make it easy to identify and do better performance. Here,we

are using Buzzer which will help to indicate a person who is nearby the patient, if the patient is in a serious stage/condition. To establish wireless communication here we are using RFID tags.The main job of RFID reader is to send and receive signals like it will send query signal to the tag and then it will receives back the exact/mirrored signal from the tag.Advantages are it provides the monitoring of health parameter of the patient health, data security, Efficiency and assurance for privacy.

[2]The specific aim of this project is to monitor remote areas and rural areas with the support of IoT technology, which can be provided with proper health services.The patient on his own effort which means he will carry the remote system himself which will monitor the patient to perform specific work at the specific time duration. Some specialised sensors are used to guide the health conditions of a patient continuously. By using a wireless network the designed device will send all the health details to the specific doctor to whom the patient has consulted. If the condition of the patient is bad , the designed device which is carried by the patient will advise the doctor to help the patient with what he is facing by taking proper steps in dealing with it. In this we are using a GSM module which will use a SIM card which will act like a cell phone to initiate similarities with the specific system. Wellbeing data is sent to the website by the utilization of the GSM module. Radio waves are used by the Wi-Fi modules which do not expect any wire.Temperature sensor will check the calculated temperature estimation related to an adaptation in defence and is changed to an electrical simple flag.

[3] The main objective of our project is to solve the intake of the correct pills at the correct time by developing and designing a device which will help us keep track of each and every tablet intake in a uncomplicated and trouble-free way. By default, the designed system will act as a standard Digital Clock. The Medicine reminder is set for 3 times a day that is for morning, afternoon and night. According to this the particular alarm is regulated by the identical operation. When the time and the Alarm register values become equal, Buzzer will alert the patient by giving a beep sound and the LED will be blinking on the particular compartment. Then the box will open and a message on the LCD screen will be displayed as "Time to take pill 1".The buzzer and LED will remain ON until the patient has taken the pill. As soon as the patient takes the pill the door will close after the delay of a few seconds.

[4] The particular aim of this project is to remember the pills that the patient needs to take without any confusions. In this project we are using the emerging technology. Here, We have developed a tool in order to provide improved medical safety and to prevent confusions in the intake of the medicines. Developed device is called a "smart pillbox" which helps the elderly People to take the proper medicines at the appropriate time according to his requirement. In this we are utilizing the medicine bag system to design and develop an intelligent pill box (IPB).

[5] In this paper there are three different strategies used. They are cloud based, data based and network based strategies. The role of smartphone is very significant in this project. It basically acts as a medium to develop keywords and shifting them to the central systems. Radio frequency notification tag and other sensors are used to give the user a unique identity key for tracking purposes. Other than these, extra sensors are also added to extend the flexibility of this project. IOT applications are incorporated with here, to enhance the smart features that aid society.

[6] This paper is comprised of a system that is used to communicate between the network connected systems, applications and devices that will help the patients and the doctors in monitoring, tracking and recording patients detailed data and medication information.To overcome the challenge of recording and analyzing huge data here we have implemented a technique that is Internet of Things Analytics (IOTA). The health and medical services in IOT are very powerfull by smart sensors which will measure, monitor and analyze the accuracy of a variety of health care statuses. This system contains the basic health related signs like pulse count and heart beat count , oxygen , pressure of the blood and the levels of glucose and oxygen in the blood.

[7] This paper proposes a microcontroller medicine reminder alarm System which eliminates the problem such as maintaining the regularity of prescribed dosage and schedule of the medication.Arduino UNO that interfaces with push-button and LCD display consist of the microcontroller which controls the function of the system and performs all the tasks. The proposed system is having the Real Time Clock (RTC) module, By using the keypad, time for the dosage can be prescribed and dosage comes out of the box.

[8] According to some surveys, the majority of the people have been forgetting to take their medicines at the proper time. To prevent the medication confusions, this system proposes a medical box which is IOT based, and it uses sensors alerting the patients in taking the proper medicines at the exact time duration without any confusions. In this the processing module is having the PC and server which is IOT based. The major role of

this system is to carry out the medical checkups and various other health care services between the hospital and the home environment. The IoT server will store the detailed information about patients condition like Temperature, Pulse rate, Reports of previous medicines, Details of doses missed, Modified details.

[9]This paper tells us the pill remainder which is designed by using Arduino ATmega which will allow the patients to take the correct amount of medicine at the specified time as prescribed by the doctor. The RFID reader will be placed inside the medicine dispenser.Corresponding to the RFID tag code, the patient name, the total dosage was taken and the total dosage missed if any, in one month will be updated in the database.When it is brought close to the reader, the medication will be dispensed.WIFI-module is used in sending the results which will be stored in the database.This project is helpful for tracking regular medicine intake and reduces manual supervision and human effort.

[10] This system contains an intelligent medicine box that will help the patients in creating easy communication between the doctor and the patient without meeting physically and to get regular health check up. The designed medicine box will help the patients to take the correct medicine at the correct time which will also notify with an email which will help the patient in intaking of medicines regularly. Both the doctor and the patient will be provided with the unique IDs and passwords for the server accessing. The server is used to record the medication information and temperature details of the patient which will help the doctor's in treating the patient. Arduino is mainly used to control the various compartments of the medical box and uses a servo motor to lock and unlock the compartment.

III. CONCLUSION

This type of application which uses the Internet of Things with the essence of new technologies, creates a whole new tendency in the society and helps people in getting their regular health monitoring. The problem of lacking conversation between doctor and patient can be eradicated by using this smart medical box. Elder people need not take the assistance of someone for the medicine intake, instead can be guided easily by the ingenious features of the medicine box. The extra facilities provided by this box such as servers to store the medication details, temperature sensor and basic health monitoring makes this project a whole compact package which can be used by any patient irrespective of his/her age, wealth and wellness. The boc can be used effortlessly by common people with simple operating because of its flawless features.

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