International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

COPY RIGHT

ELSEVIER SSRN

IJIEMR Transactions, online available on 18th Dec 2020. Link
:http://www.ijiemr.org/downloads.php?vol=Volume-09&issue=ISSUE-12

DOI: 10.48047/IJIEMR/V09/I12/43

Title: INTELLIGENT MEDICINE BOX FOR MEDICATION MANAGEMENT USING IOT
Volume 09, Issue 12, Pages: 249-253
Paper Authors

B.SRIVANI, J.SUHASINI, R.ANUSHA, Y.GAYATHRI, P.JYOTHI

USE THIS BARCODE TO ACCESS YOUR ONLINE PAPER

To Secure Your Paper As Per UGC Guidelines We Are Providing A Electronic Bar Code

International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

INTELLIGENT MEDICINE BOX FOR MEDICATION MANAGEMENT USING IOT

B.SRIVANI[1] J.SUHASINI[2] R.ANUSHA[3] Y.GAYATHRI[4] P.JYOTHI[5]

[1,2,3,4] B TECH Students, Department of ECE, Princeton Institute of Engineering & Technology For Women, Hyderabad, Telangana, India.

[5] Assistant Professor, Department of ECE, Princeton Institute of Engineering & Technology For Women, Hyderabad, Telangana, India.

ABSTRACT:

A modern health care and in addition to this intelligent home monitoring, controlling embedded system capable of taking care of the patients from all aspects, covering personalized medication, vital signs monitoring. The project gives an experimental idea of patient's health condition and monitor environmental conditions and controlling. The platform involves an open-platform-based intelligent medicine box with enhanced connectivity and interchange ability for the integration of devices and services, Intelligent pharmaceutical packing with communication capability enabled by Zigbee and actuation capability enabled by functional materials and, flexible and wearable bio-medical sensor device enabled. The proposed platform devices with in-home healthcare services for improved user experience and service efficiency. The feasibility of the implemented Health platform has been proven in field trials and if any vital signs recognized then gives alert to predefine care takers through SMS alert and monitor the conditions continuously with an IP address of WIFI.

Keywords: ***High voltage, short circuit, model, efficiency.***

1. INTRODUCTION

Medication compliance (adherence) describes the degree to which a patient correctly follows medical advice. The definition by Cramer et al.: Adherence "refers to the act of conforming to the recommendations made by the provider with respect to timing, dosage, and frequency of medication taking."[2].According to the study of Times of India, over 20\% of the India's population suffers from at least one of the non-communicable diseases (NCDs), which are estimated to cost India $6.2 trillion during the period 2012-2030 (Times of India). As per the data from World Health Organization (WHO), non-communicable diseases or chronic diseases, such as cancer, heart ailments, respiratory diseases and diabetes, 38 million people dies in every year. The aging of the population increases the prevalence of chronic diseases. According to Frost & Sullivan, in Europe a total of 50% of the hospital bed occupancy is by patients suffering from chronic illnesses such as diabetes and COPD (chronic obstructive pulmonary disease). This places a huge strain on the health care infrastructure [3]. In order to track the physical status of the elderly and in the

meanwhile keep them healthy, the following two daily tasks are essential: 1) real-time monitoring and analysing vital signs to early detect or predict life-threatening adverse events, 2) checking whether they are following their prescribed treatment, including taking their prescribed medicine on time. However, with rapidly aging populations, these daily tasks have brought great pressure and challenges to global health care systems. One review estimates that about 25% of the adult population does not adhere to their prescribed medication, which may lead to poor health outcomes and increased mortality. Poor medication adherence is a major problem for both individuals and health care providers. Technology improvements in health care facilities and services are highly desirable to meet the requirements of this giant group. A complete solution for in-home health care is still missing. A desirable system should be capable of taking care of the patients from all aspects, covering personalized medication, vital signs monitoring, on-site diagnosis and interaction with remote physicians. In addition, the existing systems rarely integrate new materials or apply new manufacturing approaches, which are always the key elements for bringing new devices or solutions into healthcare fields. By taking the above-mentioned issues into consideration, an intelligent home-based healthcare IoT system, Home Health-IoT, is proposed.

2. LITERATURE SURVEY

Existing System:

A person performs daily activities at regular interval of time. This implies that the person is mentally and physically fit and leading a regular life. This tells us that the overall well-being of the person is at a certain standard. If there is decline or change in the regular activity, then the wellness of the person is not in the normal state. Elderly people desire to lead an independent lifestyle, but at old age, people become prone to different accidents, so living alone has high risks and is recurrent. A growing amount of research is reported in recent times on development of a system to monitor the activities of an elderly person living alone so that help can be provided before any unforeseen situation happened.

Proposed System:

An intelligent home monitoring system based on ZigBee wireless sensors network has been designed and developed to monitor and evaluate the well-being of the elderly living alone in a home environment. Wellness of elderly can be evaluated for forecasting unsafe situations during monitoring of regular activities. The developed system is intelligent, robust and does not use any camera or vision sensors as it intrudes privacy. Based on a survey among elderly we find that it has a huge acceptability to be used at home due to non use of the camera or vision based sensors. The intelligent software, along with the electronic system, can monitor the usage of different household appliances and

recognize the activities to determine the well-being of the elderly.

3. RELATED STUDY

Physiologic measurements like blood pressure and temperature, x-ray and ultrasound imaging, administration of intravenous medications, and support of critical life functions are all routine procedures that use medical devices. However, at present, each device is designed to stand alone as an island. To address this issue, the Institute of Electrical and Electronics Engineers Inc. (IEEE) is developing two new point-of-care medical device standards. IEEE P1073.2.2.0 Health Informatics Point-of-Care Medical Devices Communication Application Profile Association Control Function will provide for the establishment, release and disconnection of an association between a medical device agent and a system acting as a manager. In medical device communications [14], manager systems indicate a set of desired capabilities when requesting an association. Agent systems respond by stating the capabilities they support across the connection. IEEE P1073.2.2.0 is referenced by other application-profile mode standards within the ISO/IEEE 11073 family. The second standards project, IEEE P1073.2.2.1 Health Informatics Point of Care Medical Device Communication Application Profile Polling Mode will define a method for retrieving application data with medical devices that communicate through polling protocols. will enable “plug-andplay” interoperability [14] for simple medical devices that use for management systems to query devices for all information to be communicated. There is a clear trend that the devices are getting smaller, lighter, and less obtrusive and more comfortable to wear. Although physiological measurement devices have been widely used in clinical settings for many years, some unique features of unobtrusive and wearable devices due to the recent advances in sensing, networking and data fusion have transformed the way that they were used in. First, with their wireless connectivity [10] together with the widely available infrastructure, the devices can provide real-time information and facilitate timely remote intervention to acute events such as stroke, epilepsy and heart attack, particularly in rural or otherwise underserved areas where expert treatment may be unavailable. The objectives of this paper are to provide an overview of unobtrusive sensing and wearable systems with particular focus on emerging technologies [8], and also to identify the major challenges related to this area of research.

4. PROPOSED SYSTEM

We propose a smart system that will continuously monitor the patient’s health with the help of a sensor and also at the same time will monitor the patients daily dose of medicine. Each medicine box will have its own set of timing information which will be compared to a real world clock. If the information matches, the buzzer will go off and thereby remind the patient to take his/her medicine. A data will also be

International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

maintained regarding the patient's health and his daily intake of medicines.

DESIGN AND IMPLEMENTATION

The whole system is implemented in the following manner:

- The entire medicine box will be initiated once the power is switched on.
- Once initiated the circuit is set up according to the real time clock.
- The touch sensor for each slot or box is adjusted according to the real time clock as for how many intervals the box should be initiated.
- For example box 1 is set for twelve hours, box 2 is set for 'n' hours etc.
- Each box according to set time will have a buzzer set off at the intervals provided.
- If there is no touch detected the touch sensor will register as medicine not taken which is stored on the cloud. • This process is repeated as required. • A glucometer or any other health monitoring sensor is also interfaced to the arduino board to detect the glucose of a diabetic patient which will be stored on the cloud as well.

The received parameters compares with the stored threshold values, if any variation present in the measured values then a message is sent to registered number through the GSM module. All the comparison and comparing functions are done by the microcontroller. When the medicine time has been set, the medicine box will remind users or patients to take pills using sound and message. A real time clock is provided for updating the time. During the scheduled time, medicines are put forward by using a mechanical structure with two motors. The parameter from the health monitoring part is stored in a webpage using IoT module. The doctor can update the medicine time using this webpage.

Fig.4.1. Hardware kit image.

Once the boxes are emptied after medicine consumption by the patient, and then refill the boxes with the medicines. For that a EEPROM card is used. If the card is valid the medicine box will be open and the user can refill the medicine. Once the card is removed system automatically going to locked stage. During scheduled time of medicine the LCD displayed the medicine slot number. As per the number of slots/sections in the medicine box the degree of rotation of motor varies. For example if 3 types of medicine present then each 180 degree servo motor rotates 60, 120 and 180 degree for medicine section 1,2 and 3 respectively. After this rotation the tray motor rotates according to the size of each slot. Here each section divided into 3 slots representing 3 times of a day. After a 1 minute delay the tray motor rotates anticlockwise and the servo motor rotates opposite for reaching initial condition.

International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

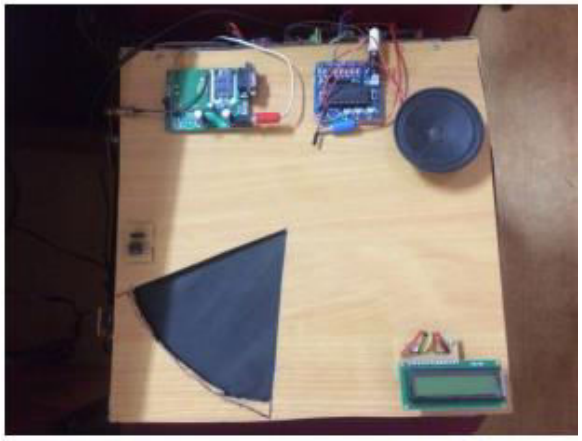

Fig.4.2. Output image.

5. CONCLUSION

The intelligent medicine box and health monitoring and management system can effectively solve the error or negligence in the field of medications. The system consists of smart sensors attached to a human body for physiological monitoring and intelligent medicine packaging to the daily medicine management. The medical data collected from the sensors are stored in a webpage and history acquired for the patients are personal in nature. Hence the system ensures security of the highest order for the medical data on cloud storage.

REFERENCES

[1] Geng Yang, Li Xie, "A Health-IoT Platform Based on the Integration of Intelligent Medicine Box", IEEE transactions on industrial informatics, vol.10, no. 4, November 2014, Matti Mantyalo, Xiaolin Zhou, Member, IEEE, Zhibo Pang, Li Da Xu, Senior Member, IEEE,Sharon Kao-Walter, Qiang Chen and Li-Rong Zheng, Senior Member, IEEE.

[2] Alok Kulkarni, Sampada Sathe "Healthcare Applications of Internet of Things:A Review", Department of Electronics and Telecommunication, Computer Engineering Pune University, Maharashtra, India, Alok Kulkar et al, / (IJCSIT) International Journal of Computer Science and Information Technologies, Vol. 5 (5), 2014, 6229-6232

[3] David Niewolny,"How the Internet of Things is Revolutionizing Healthcare", Healthcare Segment Manager, Freescale Semiconductor.

[4] S. Tozlu, M. Senel, W. Mao and A. Keshavarzian, "Wi-Fi enabled sensors for Internet of Things: A practical approach, "IEEE Commun. Mag., vol. 50, no. 6, pp. 134-143, Jun. 2012.

[5] Elaine Brown "Eliptic Curve Cryptography" , December 2010 Math 189A: Algebraic Geometry.

[6] C. E. Koop et al., "Future delivery of health care: Cybercare,"IEEE Eng. Med. Biol. Mag., vol. 27, no. 6, pp. 29-38, Nov 2008.

[7] Engineering in Medicine and Biology Magazine, Vol27, Iss6, NovDec2008 p29-38.

[8] Z. Pang "Technologies and architectures of the Internet of Things (IoT) for health and wellbeing. "Ph.D> Dissertation, [1] Koop C.E. et al. "Future delivery of health care: Cybercare", IEEE.