Journal for Research | Volume 03 | Issue 12 | February 2018
ISSN: 2395-7549

Survey on a Modern Medicare System using Internet of Things

Swapnali Subhash Jagtap
UG Student
Department of Information Technology
DACOE, Karad, India

Pradnya Nivas Patil
UG Student
Department of Information Technology
DACOE, Karad, India

Supriya Balkrishna Shinde
UG Student
Department of Information Technology
DACOE, Karad, India

Pravin Bhanudas Pol
UG Student
Department of Information Technology
DACOE, Karad, India

Archana T. Mulik
Assistant Professor
Department of Information Technology
DACOE, Karad, India

Abstract

Since the population of the world is aging rapidly, how to provide appropriate health care to the elderly and unwell people becomes an important issue and draws high attention from medical, academic and industrial fields of the society. The Internet of Things (IoT) drives the evolution of the Internet and is regarded as a great potential to improve quality of life for the surging number of elderly people, significantly. As Android operating system gains immense popularity nowadays, it is a trend to make use of it for the wider access of IoT utility. This project presents a health monitoring system prototype based on IoT, with the increasing use of sensors by medical devices, remote and continuous monitoring of a patient's health. This network of sensors and other mobile communication devices referred to as the Internet of Things for Medical Devices (IoT-MD), is poised to revolutionize the functioning of the healthcare industry. Untimed medicine administration can always show adverse effects on the health of the patients. The proposed system is designed to help these patients to take the required medicine in the right proportion at the right time. The basic ideology is integrating the principle of IoT with weight-based slot sensing on a normal pillbox. To make it more state-of-the-art, it is inbuilt with a Wi-Fi module for alerting the patient and also the chemist at the needed instant using IoT.

Keywords: Intelligent Medicine Box, Internet-of-Things (IoT), Health-IoT

I. INTRODUCTION

Nowadays, a promising trend in healthcare is to move routine medical checks and other health care services from hospital to the home environment. This helps patients to get health care more easily especially in case of emergencies. The main motto of our proposed system is to monitor that the patient consumes right medicines at right time. Also, the main advantage is a reduction of expenditure.

For the development of our project, we are using the concept of IoT and Android. The concept of the Internet of Things first became popular in 1999. If all objects and people in daily life were equipped with identifiers, computers could manage and inventory them. The Internet of Things (IoT) is the network of physical objects —devices, vehicles, buildings and other items embedded with electronics, software, sensors, and network connectivity — that enables these objects to collect and exchange data. The Internet of Things allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems and resulting in improved efficiency, accuracy and economic benefit.

An android application could be used along with medicine box to make the System more user-friendly. Our system includes a featured medicine box which is wirelessly connected to the hospital administration. Hospital administration monitors the routine details through a webpage which is managed on the hospital side. An android application is installed on the patient's smartphone as well as in doctor's smartphone. Through this application, patients could view their prescriptions, could make appointments and get notification's regarding medicine intake.

II. REVIEW OF LITERATURE

A. Enhancing Healthcare using m-Care Box (Monitoring Non-Compliance of Medication) [1]

The proposed model here is a smart medical box which is a single board computer based assistive device for people who suffer from short-term memory loss. The model monitors non-compliance of medication which provides a single platform and connection between patient, doctor, and pharmacies. The related patient can send the status of his/her health condition through a wireless communication network. So, it is an alarm-based device that helps in reminding the patient about their medicine intake.

B. A Modern Health Care System using IOT & Android [2]

In this paper, an intelligent home-based medicine box with wireless connectivity along with an android application is implemented that helps the patient and doctor to be in a closed communication. The box is wirelessly connected to the internet to make timely updates about medicines which will be notified of the Android application within patient's smartphone. The system automatically generates the alarm so that the patient consumes medicine at right time.

C. Smart Pill Box [3]

The proposed system is designed to help these patients to take the required medicine in the right proportion at the right time. The basic ideology is integrating the principle of Alarm clock with Light based slot sensing on a normal pillbox. An alternative to the light-based sensing method using capacitive fields is also employed. To make it more state-of-the-art, it is inbuilt with a GSM module for alerting the patient and also the chemist at the needed instant.

D. A Secure IoT based Modern Health Care System using BSN [4]

By using the BSN technology patient can be monitored using a collection of tiny powered and lightweight wireless sensor nodes. It becomes possible for a doctor to handle patient from anywhere without bothering about range or territories. Here the web page is made along with their needs so that they can control the network from PC or from the phone, via an internet connection. It makes all patients those who are registered to communicate easily and provides more efficient consulting.

E. A Health Care Monitoring System using Wi-Fi Module [5]

The goal of this system is to provide health care services using sensors. The system leads the patient as he/she would no longer restrict to stay in a hospital bed. Any assistant doctor or nurse will not be required as the sensors are wearable. This provides early warning of physiological deterioration that leads to preventative clinical action that improves patient's outcome. The advantage of using different kinds of sensors is that serves patients at a wide range i.e. people living in the rural or isolated area.

F. A Hospital Health Care Monitoring System using Wireless Sensor Network [6]

Body Sensor Network helps people providing Medicare services such as medical monitoring medical data access communication with a healthcare provider such as SMS or GPRS, continuous monitoring service, etc. In this system, a coordinator node has attached ton patients body to collect signals from wireless sensors and sends them back to the base station also the patient's physiological signals are gained by the sensors attached on the patient's body, and then transmitted to the remote station. With this system, multiple patients can be diagnosed.

III. SYSTEM OVERVIEW

A. Medicine Box

The smart M-box is an innovative approach for detection of available medicine quantity at patient side. M-box is designed with ESP-8266 micro-controller along with inbuilt Wi-Fi connectivity to connect it to the IoT. A load cell sensor is used to measure the weight of the medicine box. The load cell is connected to M-box which send the value to the controller, continuously controller calculates values as it is coded using Embedded C; takes internet connection through Wi-Fi and sends those values to the online database from where it can be accessed on user's as well as pharmacist's app to monetize the requirements.

The components used in the Medicine box are load cell sensor, ESP-8266 microcontroller along with Wi-Fi module and a plastic box.

B. Online Consulting

Online consulting is another new approach in our system where patients can consult to doctor online and can be treated by a doctor by allotting medicines. The only precaution we have to take is that patient can consult online for regular seasonal illnesses and not for serious diseases. In this approach, patients register on the app and the data is stored in the online database. After registration one can login to the app and can consult to the available doctor through the app by simply sending symptoms of illness; doctor whoever is online can view the symptoms instantly and can reply with probable cause or disease along with medicines preferable. If none of the doctors is available at instant then system checks if the previous suggestions available for the same problem if it is then the system automatically replies with same suggestion and if not, available it replies that "waiting for

the doctor to respond". In the same app, the patient can monitor his/her medicine box for the available quantity of regular medicines.

IV. CONCLUSION

This will drastically change the face of healthcare monitoring and treatment outcomes. By providing personalized and optimized services, it will promote a better standard of living. With the wide use of the internet, this work is focused to implement the internet technology to establish a system which would communicate through the internet for better health. Internet of things is expected to rule the world in various fields but more benefit would be in the field of healthcare.

Hence present work is done to design an IOT based smart healthcare system using a processor. Nations across the world are struggling to improve patient care and it provides a timely and cost-effective response to this critical imperative. Moreover, recent developments in sensor, internet, cloud, mobility and big data technologies have led to affordable medical devices and connected health programs, vastly increasing the potential of IoT to influence further changes.

ACKNOWLEDGMENT

It gives us a great sense of pleasure to present the survey paper of the B.E. Project undertaking during B.E. Final Year. We owe a special debt of gratitude to our guide Ms. Archana T. Mulik Department of Information Technology for her constant support and guidance throughout the course of our work. Her sincerity, thoroughness, and perseverance have been a constant source of inspiration for us. We also take the opportunity to acknowledge the contribution of Mr. Ashish N. Patil, Head of Department of Information Technology for his full support during the development of the project and survey on a Modern Medicare System using the Internet of Things.

REFERENCES

[1] AakashBharadwaj, S. DivyankYarravarapu, K.S.P.Sandeep and their team, "Enhancing Healthcare Using M-Care Box (Monitoring non-compliance of Medication)" International Conference on Innovative Mechanisms for Industry Applications(ICIMIA) 2017.
[2] Gipsa Alex and team, "A Health Care System Using IOT and Android" International Journal on Computer Science and Engineering (IJCSE) Vol.8 N0.4 April 2016.
[3] Aakash Sunil Salgia, K. Ganesan and Ashwin Raghunath, "Smart Pill Box" Indian Journal of Science and Technology, Vol 8(S2), 189–194, January 2015.
[4] Chithra. V P, Dr. G. Prakash M, "A Secure IoT-Based Modern Health Care System Using BSN" International Journal of Advanced Research in Basic Engineering Sciences and Technology (IJARBEST) Vol.3, Special Issue.24, March 2017.
[5] Mrs. SonalChakole, Ruchita R. Jibhkate, Anuj V. Choudhari, Shrutika R. Gawali, Pragati R. Tule, "A Healthcare Monitoring System Using Wi-Fi Module" International Research Journal of Engineering and Technology(IRJET), Vol 04 Issue:03, Mar-2017.
[6] Media Aminian and Hamid Reza Naji, "A Hosptial Healthcare Monitoring System using Wireless Sensor Networks"
[7] B. Sobha Babu, K. Srikanth, T. Ramanjansyulu, I. Lakshmi Narayan, "IoT for Healthcare" International Journal of Science and Research(IJSR) ISSN(online):2319-7064 Index Copernicus Value(2013):6.141 Impact Factor(2014):5.611
[8] Geng Yang, Li Xie, Matti Mäntysalo, Xiaolin Zhou,Zhibo Pang, Li Da Xu, Senior,Sharon Kao-Walter, Qiang Chen, and Li-Rong Zheng, "A Health-IoT Platform Based on the Integration of Intelligent Packaging, Unobtrusive Bio-Sensor, and Intelligent Medicine Box" IEEE Transaction Industrial Informatics, Vol. 10, No. 4, November 2014.
[9] S.Joephine Selvarani, "Online Health Monitoring System" International Journal on computer science and engineering, Vol. 3, No. 4, April 2011.
[10] S. Riazul Islam, Daehan Kwak, M. Humaun Kabir, M. Hossain and Kyung-Sup Kwak, "The Internet of Things for Health Care: A Comprehensive Survey" IEEE Access, Vol. 3, 2015.