

IoT Based Smart Patient Health Monitoring System using Arduino

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Abstract - The goal of this project is to help the people to get the proper treatment and diagnosis with all the advanced medical technologies in time. The IoT (internet of things) have been extensively used to connect the advanced clinical assets and offer smart, reliable, and fine healthcare services to patients. It has been implemented by using different type of sensors to monitor the vital signs in patients heartbeat conditions, temperature and humidity. Transmission of the information from the body sensors to the server is done by the WI-FI module where the data is stored in server. The Arduino microcontroller is used to convert the data into readable signals. The doctor can view the patient's condition through laptop or through the android phones from the cloud servers. The main purpose of this paper is both patient and doctor can have the real time communication and is extremely helpful for chronically ill, elderly and even for bedridden patients in home.

Key Words: Arduino UNO, WIFI module, Internet of Things (IOT).

1. INTRODUCTION

A remote health monitoring wearable device ensures safe and sound life as they are extremely usefull and reliable. Due to the rapid growth in health sector, the developing countries have new technologies that have been emerged in order to improve the quality of human life with the advanced health care services and treatments. In this paper we are monitoring only three vital signs in the patient's body such as heartbeat, temperature and humidity the remote monitoring of these conditions will have a great significance in the medical field

1.1 Literature Review

The authors of [1] address the IoT concepts that are the implementation and integration of technologies, wired sensor, and wireless sensor, tracking technologies, identification, communication solutions and the promising paradigm. The main goal of this paper is the activities performed in the various fields like information science,

Even the doctors and health workers have the burden of constantly monitoring the patients for irregular heartbeats, humidity and temperature. By using the smart health monitoring system it will be a relief to both patients

telecommunication, electronics the survey on this paper improves the communication protocols, identification sensors and tracking sensors.

The authors of [2] give you the idea about BAN and how the remote medical monitoring will become the standard procedure for managing certain conditions. The more computational capability about the data hub telehealth the available and public switched telephone network. The main purpose of this paper is it offers you to know about the secure mobile computing system and how energy is the primary concern in wireless nature and how authentication is essential what are the system issues and challenges to be faced and how to avoid the faults.

The authors of [3] and [4] addresses the problems faced by using the wireless communication technologies it is the survey on wireless technology and how it can be applied to the smart hospitals monitoring system it contributes the support for continuous monitoring of patient health even from remotely places. It explains the development and workflow distinct monitoring of healthcare services. The inquiry of this paper deals with the advantages, drawbacks, the present new technologies, show definitions, the results and solution for future systems.

1.2 Objective

The main objective of this project is to continuously monitor the health condition of any patient. If any abnormality is seen, then it has the capability to detect the abnormal signs with the help of sensors attached to the patient body and send the information to the doctor with the Wi-Fi module.

2. Problem Statement

Usually cronically ill patients suffer the burden of wearing wires in hospitals and many patients in villages have to suffer travelling long for routine health checkups. Many elderly ill patients require a person to keep an eye on them and monitor their health conditions all the time.

and doctors, since the device monitors the health data and triggers an alarm for any abnormalities. Patients can skip travelling for routine health checks and the doctors can monitor the conditions remotely.

Table -1: Block Diagram of the proposed system

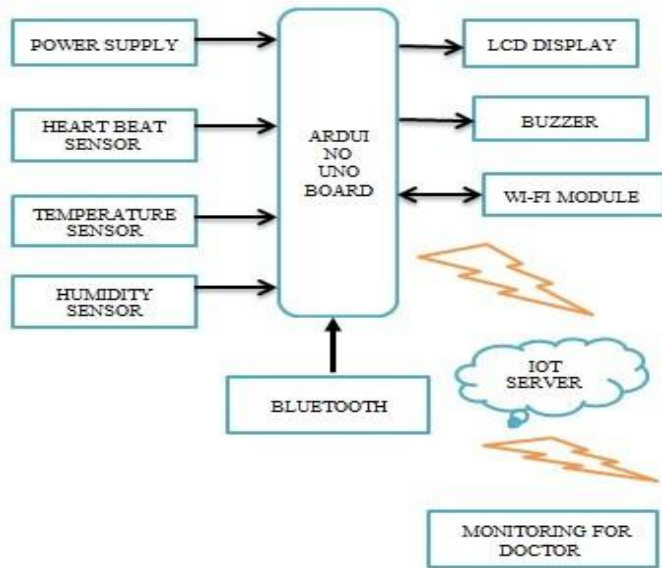


Fig -1: Illustrates block diagram of IOT based health monitoring system

2. System Architecture

HARDWARE ARCHITECTURE: The IOT based health monitoring system requires the vital sensors i.e, hearbeat sensor, temperature sensor and humidity sensor, A buzzer to alert during an abnormality, an Arduino UNO microprocessor to process and convert the signals and transmit the data to the cloud in human readable form. A WiFi module to connect the microprocessor to the cloud

SOFTWARE ARCHITECTURE: Arduino IDE: The Arduino integrated development environment (IDE) is a crossplatform application that is written in the programming language Java. In our project it is used to write and upload programs to NodeMCU microcontroller. The Arduino IDE IO Libraries can connect with ThingsSpeak using NodeMcu. ThingsSpeak is the cloud server to collect and maintain records of patients with their unique key of the microprocessor.

3. CONCLUSION

Hence this project provides the ease for the doctors to monitor the health of the patients even outside the hospital or apart from their duty hours. The health of the patients is monitored remotely. This project is cost effective and provides timely response to improve the patients' health and avoids the patients to have long stays in hospital it also helps them to move freely and walk happily with the help of wireless sensors, These are the measurable benefits which avoids the patients from daily regular visits to hospitals which is extremely painful for chronically ill, elderly and bedridden patients in home. So by using the project we can solve many problems of the healthcare which the society is facing and improve the quality for a better human life.

REFERENCES

- [1] Luigi Atzori et al, "The Internet of Things: A survey", Computer Networks, Vol.54, pp. 2787-2805,2010
- [2] Andrew D. Jurik and Alfred C. WeaverW.-K. Chen, Linear Networks and Systems. Belmont, CA: Wadsworth, 1993, pp. 123-135.
- [3] Franca Delmastro, "Pervasive communications in healthcare", Computer Communications Vol.35, pp.1284-1295, 2012. ArunaDevi.S et al. /International Journal of Computer Science &Engineering Technology(IJCSET) ISSN: 2229-3345Vol. 7 No. 03 Mar 2016 72
- [4] Eleanor Borgia, "The Internet of Things vision: Key features, application and open issues", Computer Communication, Vol.54, pp. 131, 2014. [3]
- [5] .Gennaro Tartarisco, Giovanni Baldus, Daniele Corda, Rossella Raso, Antonino Arnao, Marcello Ferro, Andrea Gaggioli, Giovanni Pioggia, "Personal Health System architecture for stress monitoring and support to clinical decisions", Computer Communications Vol.35, pp.1296 - 1305, 2012.