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IOT Based Health Monitoring System

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ABSTRACT

Among many applications enabled by the Internet of Things (IoT), smart and connected health care is a particularly important one. Networked sensors, either worn on the body or embedded in our living environments, make possible the gathering of rich information indicative of our physical and mental health. Captured on a continual basis, aggregated, and effectively mined, such information can bring about a positive transformative change in the health care landscape. In particular, the availability of data until now coupled with a new generation of intelligent processing algorithms can: (a) facilitate an evolution in the practice of medicine, from the current post facto diagnose-and treat reactive paradigm, to a proactive framework for prognosis of diseases at an incipient stage, coupled with prevention, cure, and overall management of health instead of disease, (b) enable personalization of treatment and management options targeted particularly to the specific circumstances and needs of the individual, and (c) help reduce the cost of health care while simultaneously improving outcomes. In this paper, we highlight the opportunities and challenges for IOT in realizing this vision of the future of health care.

Keywords: IOT, Arduino, Android Application

I. INTRODUCTION

Wearable health-monitoring systems (WHMS) have drawn a lot of attention from the research community and the industry during the last decade as it is pointed out by the numerous and yearly increasing corresponding research and development efforts. As healthcare costs are increasing and the world population is ageing, there has been a need to monitor a patient's health status while he is out of the hospital in his personal environment. To address this demand, a variety of system prototypes and commercial products have been produced in the course of recent years, which aim at providing real-time feedback information about one's health condition, either to the user himself or to a medical center or straight to a supervising professional physician, while being able to alert the individual in case of possible imminent health threatening conditions. In addition to that, WHMS constitute a new means to address the issues of managing and monitoring chronic diseases. In this project, we are providing an android application to the users which gives alert notifications if any abnormal conditions have occurred in the health of that person. Data is continuously read from the sensors that are kept in the body or in the environment and compares data with already stored data and then generates alerts to the users. Wearable systems for health monitoring may comprise various types of miniature sensors, wearable or even implantable. These biosensors are capable of measuring significant physiological parameters like heart rate, blood pressure, body and

skin temperature, oxygen saturation, respiration rate, electrocardiogram, etc.

II. ADVANTAGES

- ✓ This low cost system with minimum requirements takes care of health.
- ✓ Using android application the main advantage is sending notification to patients using it at same time.
- ✓ This system does not require the user to manually trigger an alert but still it provides the user withthe advantage of analysing the situation.
- ✓ This application also helps to make direct alerts to users registered with that application.
- ✓ Using android application the usage of different modules can be reduced.

III. IMPLEMENTATION SETUP

A. Components required

1) Arduino Board
2) Accessible Wi-Fi
3) Temperature Detection Sensor
4) Smart Phone
5) Internet
6) Arduino IDE (Software)
7) Heart Beat Sensor

B. Arduino

Arduino **is an electronics prototyping platform based** on a micro controller. Arduino boards are usually made using Atmel's Atmega series micro controllers or ARM micro controllers. Arduino is an open source hardware project which means the designs of board (the hardware architecture, CAD files) are available to public with open source license. Anyone can modify the hardware designs and the associated software.Arduino is composed of two major parts:

1. The Arduino board, which is the piece of hardware you work on when you build your objects;
2. The Arduino IDE, the piece of software you run on your computer. You use the IDE to create a sketch (a little computer program) that you upload to the Arduino board. The sketch tells the board what to do.

Arduino IDE

The Arduino integrated development environment is a cross-platform application that is written in the programming language Java. It is used to write and upload programs to Arduino board. The source code for the IDE is released under the GNU General Public License, version 2.

Fig 1. Arduino Board

C. Wi-Fi Module:

The purpose of this module is to send the information gathered from the ultrasonic sensor is sent to the cloud, so that it can be used for further analysis. To send the data continuously, using GSM would incur cost on the user. Instead, with the help of this Wi-Fi module, there can be a connection established between the cloud server and Arduino, by connecting to a Wi-Fi router. The Wi-Fi module that can be used is ESP8266. GSM module consists of a GSM modem assembled together with power.

D. Temperature Sensor:

Contact sensors include thermocouples and thermistors that touch the object they are to measure and noncontact sensors measure the thermal radiation a heat source releases to determine its

temperature. The latter group measures temperature from a distance and often are used in hazardous environments. Temperature sensors are used in diverse applications such as food processing, HVAC environmental control, medical devices, chemical handling and automotive under the hood monitoring (e.g., coolant, air intake, cylinder head temperatures, etc.). Temperature sensors tend to measure heat to ensure that a process is either; staying within a certain range, providing safe use of that application, or meeting a mandatory condition when dealing with extreme heat, hazards, or inaccessible measuring points.

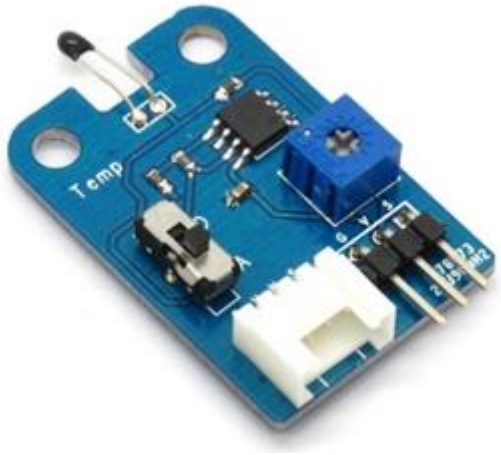

Fig 2: Temperature Sensor

IV. WORKING OF HEART BEAT SENSOR

A heart rate monitor (HRM) is a personal monitoring device that allows one to measure/display heart beat in real time or record the heart rate for later study. It is largely used to gather heart rate data while performing various types of physical exercise. Measuring electrical heart information is referred to as Electrode.

Medical heart rate monitoring used in hospitals is usually wired and usually multiple sensors are used. Portable medical units are referred to as a Holster monitor.

Consumer heart rate monitors are designed for everyday use and thus don't use wires to connect. Modern Heart rate monitors commonly use one of two different methods to detect heart rates. Both methods can provide the same basic heart rate data. The original technology is based on electrical sensors and these are still the default used for medical devices. The newer technology is based on optical sensors.

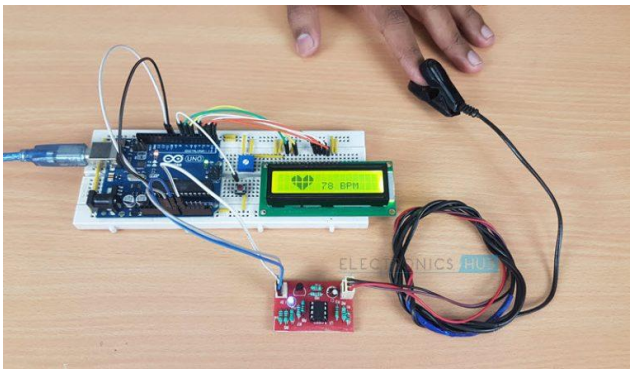

Fig 3: Heart Beat Sensor

V. FURTHER SCOPE

Proposed system will monitor heart beat rate, human's body temperature, cough count and fits detection by using a specific sensors, GPS and GSM technologies to display these information into a smart mobile phone or it will send the data to webserver. The proposed system consists of an end-to-end smart health application that can be building up from two functional building blocks. Main function of the first building block is to gather all sensory data that are related to the monitored persons, whereas the second block functions are to store, process and present the resulted information.

VI. CONCLUSION

This paper reviewed the state-of-the-art in research and development of wearable sensor-based systems for health monitoring. As it is shown by the current technology status, WHMS have the potential to revolutionize healthcare by providing low-cost solutions for ubiquitous, all-day, unobtrusive personal health monitoring and are expected to enable early detection and better treatment of

various medical conditions as well as disease prevention and better understanding and self-management of chronic diseases. However, the current study highlights the fact that there are still a lot of challenges and issues that need to be resolved for wearable systems to become more applicable to real-life situations.

VII. REFERENCES

[1]. L. Gatzoulis and I. Iakovidis, "Wearable and portable ehealth systems,"IEEE Eng. Med. Biol. Mag., vol. 26, no. 5, pp. 51-56, Sep.-Oct. 2007.

[2]. Y. Hao and R. Foster, "Wireless body sensor networks for health monitoring applications," Phys. Meas., vol. 29, pp. R27-R56, Nov. 2008.

[3]. A. Milenkovic, C. Otto, and E. Jovanov, "Wireless sensor networks for personal health monitoring: Issues and an implementation," Comput.Commun., vol. 29, pp. 2521-2533, 2006.

[4]. E. Monton, J. F. Hernandez, J. M. Blasco, T. Herve, J. Micallef, I. Grech, A. Brincat, and V. Traver, "Body area network for wireless patient monitoring," Telemed. E-Health Commun. Syst., vol. 2, pp. 215-222, 2008.

[5]. O. Aziz, L. Atallah, B. Lo, M. ElHelw, L.Wang, G. Z. Yang, and A. Darzi, "A pervasive body sensor network for measuring postoperative recovery at home," Surg. Innovation, vol. 14, pp. 13-90, Jun. 2007.

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