ISSN:2348-2079

Volume-5 Issue-2

International Journal of Intellectual Advancements and Research in Engineering Computations

Monitoring and controlling the real intensive care unit applicances in health care systems by using iot

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***Abstract*-The recent advancements in technology and the availability of internet make it possible to connect various devices that can communicate with each other and share data. The internet of things (IoT) is a new concept that allows users to connect various sensors and smart devices to collect real-time data from the environment. However, it has been observed that a comprehensive platform is still missing in the e-health and m-health architectures to use smartphone sensors to sense and transmit important data related to patient's health. In this paper, our contribution is twofold. Firstly, we critically evaluate the existing literature, which discusses the effective ways to deploy IoT in the field of medical and smart health care. Secondly, we propose a new semantic model for patient's e-health.**

Keywords—IoT, Transmission control protocal, Heart beat sensors, Temperature sensors, Blood pressure sensors, solenoid valve.

I. INTRODUCTION

Development in the radio hardware and the wireless communication protocols enable tremendous changes in relaying sensor measurements. Various applications are gaining on wireless sensing devices for monitoring and controlling purposes. Remote health monitoring is one of the emerging applications that has attracted system designers to devise efficient and reliable communication protocols. If we consider predictions that the world population of elderly people (65 and older) will double in 2025, compared to numbers in 1990, then it is obvious that providing an efficient and reliable healthcare, at lower or at the same price as today, becomes a major challenge. Almost 30% of all deaths worldwide are related to cardiovascular diseases that can be easily detected and prevented by reliable and timely remote health monitoring systems. Consequently, health monitoring systems are about to revolutionize the human life by providing fast detection and real-time monitoring of patients. However, when employing the enabling technologies, we have to consider the well-being of the patients, since it is unacceptable to employ solutions that mismatch standards of current best practices in healthcare. This paper also investigates the controlling part of health care systems.

II. COMMUNICATION NETWORKS IN HEALTH MONITORING SYSTEMS

There are two types of sensors used for monitoring the human body; classified as implantable sensors (biosensors that measure metabolite levels for diabetes, pacemakers and endoscope capsules), and wearable sensors (blood pressure, heart beat sensors, temperature sensors) . In this work, we focus on a wireless body area network (WBAN) as it is the most common type of network within a health monitoring system, responsible for collecting measurements from sensors with low-power radios using short range communication through unreliable links. We also briefly describe the high power networks within a health monitoring system. We categorize the communication strategies in health monitoring systems into: intra-WBAN communication (i.e., data exchange between sensing devices and the coordinator, located on the human body), and beyond-WBAN communication (i.e., communication from the WBAN coordinator, located on the body of primary end-user towards the secondary end-user). In this section, we consider the possible wireless standards/technologies for intra-WBAN and beyond-WBAN communications. We also explain some of the quality of service (QoS) communication requirements, followed by the main challenges from a communication architecture point of view.

A. Intra-WBAN communication networks Intra-WBAN communication, which is also known as WBAN, covers a wide variety of applications, such as health care, fitness, and entertainment. It is usually used for collecting, processing and forwarding the

data over a long period of time. Each WBAN consists of a number of sensing devices with processing and communication capabilities. Even if WBANs share require a new line of research. Wearable sensors that are placed on the human body are usually used for long-term health monitoring and can prevent life threatening events. The main LPWN standards for on-body communication are: IEEE 802.15.4, IEEE 802.15.6 and Bluetooth. However, the IEEE 802.15.6 radio is unavailable to be employed within WBAN applications. Table I summarizes the main features of these standards and technologies, comparing them with some higher power consuming wireless networks, such as Wi-Fi and Low-power Wi-Fi.

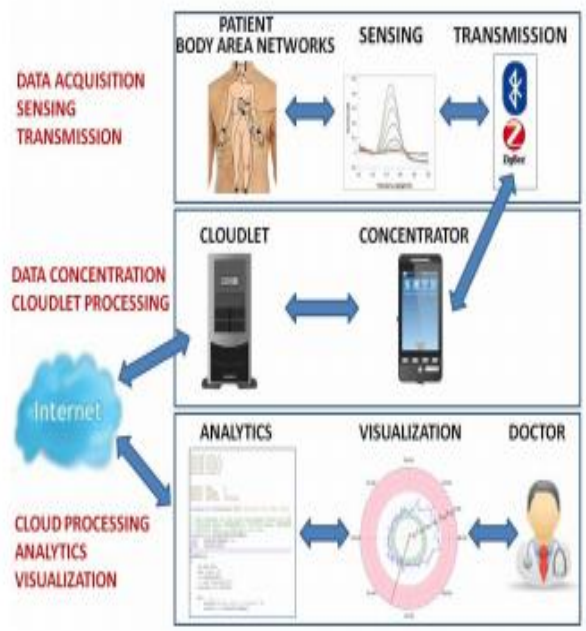


Fig. 1. Components of a remote patient monitoring system that is based on an IoT-Cloud architecture.

III. SENSORS

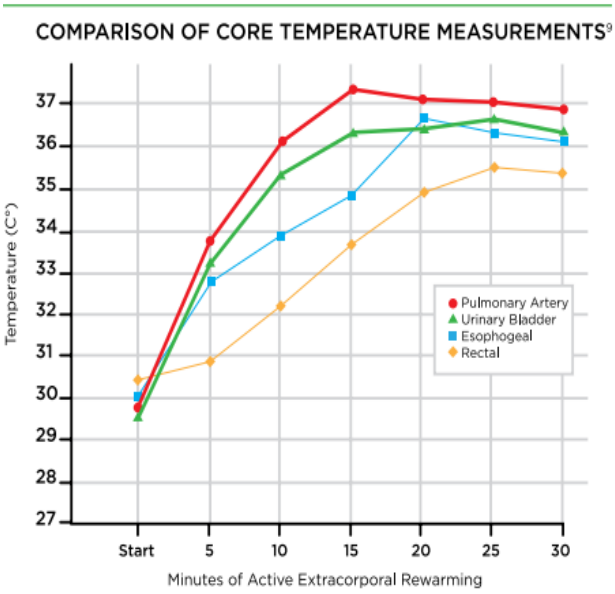
A) Temperature sensors

It measure the amount of heat energy or even coldness that is generated by an object or living things, allowing us to "sense" or detect any physical change to that temperature producing either an analogue or digital output.

There are many different types of temperature sensors available and all have different

many challenges with wireless sensor networks (WSNs), there are several specific design questions that

characteristics depending upon their actual application.



B) Heart beat sensors

A person's heartbeat is the sound of the valves in his/her heart contracting or expanding as they force blood from one region to another. The number of times the heart beats per minute (BPM), is the heart beat rate and the beat of the heart that can be felt in any artery lies close to the skin in the pulse.

Heart beat can be measured based on optical power variation as light is scattered or absorbed during its path through the blood as the heart beat changes.

C) Blood pressure sensors

Blood pressure is a measure of how hard the blood pushes against the walls of your arteries as it moves through your body.

Monitoring blood pressure at home is important for many people, especially if you have high blood pressure. Blood pressure does not stay the same all the time. It changes to meet your body's needs. It is affected by various factors including body position, breathing and sleep.

IV. CONTROLING IN HEALTH CARE SYSYTEM

In this paper we controlling the health care systems by using

The solenoid valve. A solenoid valve is an electromechanically operated valve. The valve is controlled by an electric current through a solenoid:

in the case of a three-port valve, the outflow is switched between the two outlets ports.

V. Results and conclusion

In this paper, we review the ongoing research within health monitoring systems in terms of wireless communication infrastructure, QoS requirements, security and safety issues. We identify the main challenges regarding wireless communication technologies and security threats. We also propose a generic framework, classified into three tiers based on the specific advantages and limitations of wireless technologies together with the application demands, and provide a set of solutions to the main communication challenges and security requirements related to these tiers. We have identified security as a critical point in health monitoring-related applications, and therefore it is paramount to select LPWNs that provide sufficient security guarantees.

Thus we collecting the data from the patients by using different types of sensors and also controlling the glucose strip by using solenoid valve.

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