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PATIENT MONITORING

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***Abstract*—**Today the number of people with heart diseases are increasing day by day. This is due to the different risk factors such as diet habits, physical inactivity and alcohol consumption among many peoples. According to the World Health Organization, over 6.1 million people die from heart disease which is the leading cause of death of people for both men and women. It is obvious that ordinary people cannot always feel how close to heart attack is. Doctors and nurses are not able to care for their patients when they are at home. One of the solution to this dilemma is Patient Monitoring System.

Index Terms **–** World Health Organization, Heart Attack, Doctors, dilemma, Patient Monitoring System.

I. INTRODUCTION

The popularity of Internet of Things are increasing day by day in the area of remote monitoring system. The remote monitoring systems include, vehicle or assets monitoring, Kids/pets monitoring, fleet management, parking management, water and oil leakage, energy grid monitoring etc. The similar name of Intensive Care Unit (ICU) is Critical Care Unit (CCU). It is also familiar with some other name such as Intensive Treatment Unit. ICU distinct sector of a hospital that delivers rigorous treatment. Not all the patients need intensive care. Medical scientist categorized the patients who needs special treatment. Such categories include:

- If the physiological regulatory systems of a patients are not stable because of drug overdose.
- Patients with Cardiovascular or organ failure disease.
- After critical surgery such as open-heart surgery, single or multiple organ replacement etc. Those patients are directly transfer to the ICU unit.
- If a patient suffering malfunction in several organs such as trauma or septic shock.
- Mother and baby throughout the childbirth process.

Features

- Free and immediate update of the condition of the patient.
- 24-hours monitoring of the patient's condition via website.
- Update the patient's condition with the help of the internet

Drawbacks

- The system is not portable.
- The patient can't able to understand the analog.
- Complex system and difficult to operate.

II. PROPOSED SYSTEM

This project deals with the simplification of procedure followed by patients who connectedto the device whose heartbeat and temperature are noted in the cloud through web page. The Arduino board collected the information about the patient health parameter from various sensors which were directly connected with principle controller. IoT cloud platform is used as an IoT cloud for our proposed systems.

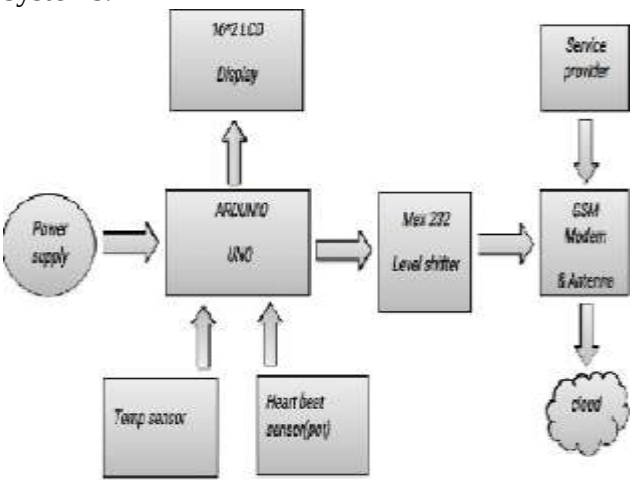

Figure 1: Proposed Diagram

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III. SYSTEM DESCRIPTION

A. Hardware Description:

1)Arduino Uno:

Arduino is an open-source project that created microcontroller-based kits for building digital devices and interactive objects that can sense and control physical devices. The project is based on microcontroller board designs, produced by several vendors, using various microcontrollers. These systems provide sets of digital and analog input/output (I/O) pins that can interface to various expansion boards (termed shields) and other circuits. The boards feature serial communication interfaces, including Universal Serial Bus (USB) on some models, for loading programs from personal computers. For programming the microcontrollers, the Arduino project provides an integrated development environment (IDE) based on a programming language named Processing, which also supports the languages C andC++.

Figure 2: Arduino Uno

2)GSM Modem

GSM is a mobile communication modem; it is stands for global system for mobile communication (GSM). The idea of GSM was developed at Bell Laboratories in 1970. It is widely used mobile communication system in the world. GSM is an open and digital cellular technology used for transmitting mobile voice and data services operates at the 850MHz, 900MHz, 1800MHz and 1900MHz frequency bands. GSM system was developed as a digital system using time division multiple access (TDMA) technique for communication purpose. A GSM digitizes and reduces the data, then sends it down through a channel with two different streams of client data, each in its own particular time slot. The digital system has an ability to carry 64 kbps to 120 Mbps of data rates.

Figure 3: GSM Modem

3)Heartbeat Sensor:

Heart beat sensor is designed to give digital output of heat beat when a finger is placedon it. When the heart beat detector is working, the beat LED flashes in unison with each heartbeat. This digital output can be connected to microcontroller directly to measure the Beats per Minute (BPM) rate. It works on the principle of light modulation by blood flow through finger at each pulse.

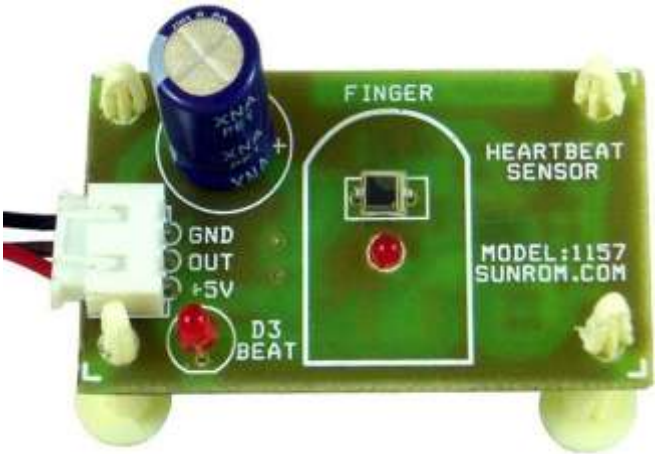

Figure 4: Heartbeat Sensor

B. Software Description:

1)Arduino IDE:

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs – light on a sensor, a finger on a button, or a twitter message- and turn it in to an output – activating a motor, turning on a LED, publishingsomething online.

IV. CONCLUSION

The system developed patient monitoring based on Internet of things, is an alternative that can be used to help patients with heart problems and abnormal increase or decrease in temperature. Likewise with this set of solutions the aim is to improve the knowledge in monitoring the patient's heartbeat and temperature by providing a webpage for the patient's attender and the doctor. The condition of the patient was monitored in a easy way, so that the patient's attender or doctor cannot be worried as they can monitor the patient's heartbeat through the webpage. Many patients died in ICU unit due to the careless of in charge personal. In traditional system is not able to provide constant monitoring facilities. Our proposed system described in this paper allows doctors or nurses, as well as hospital in-charge personal allows them to monitor the patient in ICU unit in real time, which improves the efficiency and service quality. There is a huge opportunity to modify this system as a wearable device that allows us to monitor the older people or babies remotely from any place. A need for real-time health an activity recognition with wearable sensors is a prerequisite for assistive paradigms. This paper presents a brief overview of existing health and behavior-monitoring approaches based on wearable IoT technologies. Secondly, it illustrates a novel health monitoring system framework WISE, which enables the real-time monitoring of the patients or elderly users and allows the information to be accessed from the cloud.

FUTURE ENHANCEMENT

IOT technology promises huge potential and benefits in the domain of personalized healthcare. The wireless body area network that consists of wearable sensing devices and communication modules have become the key enablers. Whereas patients' health condition can be remotely monitored in real time, emergencies can be identified accurately, and associated stakeholders such as doctors and family members can be informed when needed. Thereby, research in this area has been extensive, whilst challenges still exist, as discussed in the following section. Biomedical signal monitoring often requires operating on a 24/7 basis; however, it is still uncomfortable and obtrusive for people to attach a number of sensors on some parts of the body round the clock and in the long term. Hence, a more intelligent sensor data filtering mechanism must be developed, in order to precisely retrieve the most valuable information. Moreover, battery life is one of the key issues with many sensing devices including the smart phone, especially with Bluetooth and Wi-Fi connections. Therefore, a more sophisticated data transmission strategy can be an alternative solution, where the data transmission frequency can be minimized whilst maintaining or optimizing the overall performance of the system. BAN has been the promising technique for personalized healthcare; therefore, more attention must be paid to the security, privacy, reliability, and robustness of the network. From a technical perspective, a BAN must be more robust and tolerant when a node might fail due to the battery shortage or be damaged. The network must be ensure that the communications among other nodes would not be interrupted when some of the nodes fail.

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