Integrating a Instant Messenger into the Institution Website

Arpitha r   Madhu Bk   Anand ml,Arpitha sc

Abstract— *In the last decade the healthcare monitoring systems have drawn considerable attentions of the researchers. The prime goal was to develop a reliable patient monitoring system so that the healthcare professionals can monitor their patients, who are either hospitalized or executing their normal daily life activities. In this work we present a mobile device based wireless healthcare monitoring system that can provide real time online information about physiological conditions of a patient. Our proposed system is designed to measure and monitor important physiological data of a patient in order to accurately describe the status of her/his health and fitness. In addition the proposed system is able to send alarming message about the patient's critical health data by text messages or by email reports. By using the information contained in the text or e-mail message the healthcare professional can provide necessary medical advising. The system mainly consists of sensors, the data acquisition unit, microcontroller (i.e., Arduino), and software (i.e., LabVIEW). The patient's temperature, heart beat rate, muscles, blood pressure, blood glucose level, and ECG data are monitored, displayed, and stored by our system. To ensure reliability and accuracy the proposed system has been field tested. The test results show that our system is able to measurethe patient's physiological data with a very high accuracy..*

Keywords—*ZigBee, remote healthcare, mobile device, patient monitoring*

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I INTRODUCTION

Health is one of the global challenges for humanity [1]. According to the constitutions of World Health Organization (WHO) the highest attainable standard of health is a fundamental right for an individual [2]. Healthy individuals lead to secure their lifetime income and hence to increase in gross domestic product and in tax revenues. Healthy individuals also reduce pressure on the already overwhelmed hospitals, clinics, and medical professionals and reduce workload on the public safety networks, charities, and governmental (or non-governmental) organizations. To keep individuals healthy an effective and readily accessible modern healthcare system is a prerequisite. Recently, mobile networks are considered critical for solving future global health challenges [3]. With the global market penetration of the mobile phones the mobile healthcare system (i.e., m-Health) is a matured idea now. By using the mobile phone healthcare system can be made available for people, who are living in remote areas without much access to other types of communications.

Even a simple mobile phone can become a powerful healthcare tool now. Text messages and phone calls can quickly deliver real-time and critical information of a patient to a remote location. Thus the patients, living in remote areas, can reduce unnecessary back and-forth travel to the far located healthcare centers. However, mobile devices

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*Arpitha r   Anand ml,Arpitha sc
is currently pursuing bachelor degree program in ISE DEPT., at RRIT.*

- Madhu Bk [3] *Professor & HOD in ISE Dept at RRIT, Bengaluru- 90*

have become "smart" now to do more rather than simply transmit medical information and advice.

1.2 Related Works

Wireless health monitoring system (WHMS) has drawn considerable attentions from the research community as well as industry during the last decade. Numerous and yearly increasing research and development efforts have been posted in the literatures. We have limited this effort to include only some of the very recent related works. Real time mobile healthcare system for monitoring the elderly patients from indoor or outdoor locations has been presented in [4]. A bio-signal sensor and a smartphone are the main components of the system. The data collected by the bio-signal sensor are transmitted to an intelligent server via GPRS/UMTS network. The system is able to monitor the mobility, location, and vital signs of the elderly patient from a remote location. Cloud computing has been incorporated in a healthcare system in [5]. The authors have proposed a cloud based intelligent healthcare

monitoring system (CIHMS) for providing medical feedback to a patient through cloud. The proposed system can obtain adequate data related to patient's disease and deliver the data to a remote location by using cloud computing devices.

II ANALYSIS

Problem Definition

Our vision is to take care of patient health using Raspery pi kit & ardino board in this project we track patients body

temp & heartbeat continousoly .

Aim

The aim of this project is to provide good health to a patient with tracking is temp & heartbeat without fail this helps his side people to view thr guardians sitting around the world.

Proposed System

Currently, the healthcare system is undergoing a cultural shift from a traditional approach to a modernized patient centered approach. They need to visit the patients for necessary diagnosis and advising. There are two basic problems associated with this approach

Firstly, the healthcare professionals must be on site of the patient all the time and secondly, the patient remains admitted in a hospital, wired to bedside biomedical instruments, for a period of time

III SYSTEM IMPLEMENATION ALTERNATIVES

In order to implement the system we consider some commercial, business, and engineering aspects namely cost, simplicity, efficiency, easy-to-use, low energy consumption, and environment friendly. Based on these aspects we consider four different alternative solutions namely (a) Microcontroller and Smart Phone, (b) USB audio interface for the iPad, (c) Yocto- Knob device, and (d) E-Health Sensor Platform V2.0 for Arduino and Raspberry PI. In microcontroller and smartphone based solution we connect the EFM32 Tiny Gecko microcontroller with a smart phone using the audio
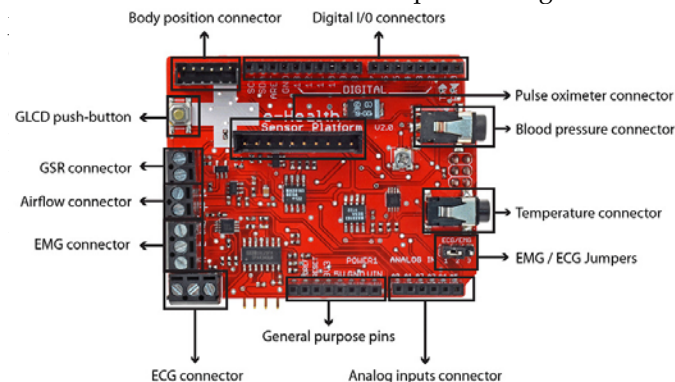
After investigating all of the above mentioned alternatives we decided to use the e-Health Sensor

Platform V2.0 for Arduino and Raspberry Pi (Biometric / Medical Applications) based solution because this solution is matched with our system objectives. While choosing this solution we consider the following design issues: (a) we need to input the data through the mobile devices, (b) we can acquire ten different data using this kit, and (c) we need to connect different sensors in this project.

1) System Components

A. ECG Electrodes

An ECG electrode is a device attached to the skin on certain parts of a patient's body ─ generally the arms, legs, and chest ─ during an electrocardiogram procedure. It detects electrical impulses produced each time the heart beats. The number and placement of electrodes on the body can vary, but the function remains the same. The electricity that an electrode detects is transmitted via this wire to a machine, which translates the electricity into wavy lines recorded on a piece of paper. The ECG records, in a great detail, are used to diagnose a very broad range of heart conditions. An ECG electrode is usually composed of a small metal plate surrounded by an adhesive pad, which is coated with a conducting gel that transmits the electrical signal.

B. The LM35 Temperature Sensor

The LM35 series are precision integrated circuit LM35 temperature sensors, whose output voltage is linearly proportional to the temperature in Celsius (Centigrade). The LM35 sensor thus has an advantage over linear temperature sensors, calibrated in °Kelvin, as the user is not required to subtract a large constant voltage from its output to obtain convenient centigrade scaling. The LM35 sensor does not require any external calibration or trimming to provide typical accuracies of ±¼°C at room temperature and ±¾°C over a full -55 to +150°C temperature range. The LM35's low output impedance, linear output, and precise inherent calibration make interfacing to readout or control circuitry especially easy. As it draws only 60 µA from its supply, it has very low self-heating, less than 0.1°C in still air.

C. Blood Pressure Sensor

Blood pressure sensor is a device that measures the pressure of the blood in the arteries as it is pumped around the body by the heart. When our heart   beats, it contracts and pushes blood through the arteries to the rest of our body. This force creates pressure on the arteries. Blood pressure is recorded as two numbers—the systolic pressure (as the heart beats) over the diastolic pressure (as the heart relaxes between beats). Some special features of blood pressure sensor includes (i) automatic measurement of systolic, diastolic and pulse, (ii) large LCD screen with

LED backlight, and (ii) touch pad key. In addition a typical blood pressure sensor can store 80 measurements data with time and date.

D. Blood Glucose Sensor

Blood glucose sensor is a medical device for determining the approximate concentration of glucose in the blood. A small drop of blood, obtained by pricking the skin with a lancet, is placed on a disposable test strip that the meter reads and uses to calculate the blood glucose level. The meter then displays the level in mg/dl or mmol/

FUTURE WORK

Some areas that we would like to explore in future research include: (1) incorporating other sensors in Health Gear, such as galvanic skin response (GSR), ECG,temperature, etc; (2) finding correlations between lifestyle variables such as current activity, diet, exercise, stress levels, etc. and changes in physiological signals; (3) developing algorithms for extracting respiration rate and blood pressure from the plethysmographic signal; (4)carrying out a study on blood oximetry at high altitudes(pilots); (5) comparing Health Gear's performance with polysomnography in a sleep clinic; (6) collaborating with medical doctors in further user studies; (7) addressing the so important issues of privacy, liability and security.

Existing System

- *There are some systems present in the market but all are having some difficulties.*

  - ➢ *Compact sensor.*
  - ➢ *Digital Heartbeat monitor.*

Draw back of existing system

- *The systems are not Portable.*
- *The patient cant able to understand the analog signals.*
- *Complex system and difficult to operate.*

PROPOSED SYSTEM

WHMS can provide real time online information about medical status.

- Our proposed system is designed to measure and monitor important data.
- Send alarming text message or email report.(i.e LabVIEW)
- The patient temperature ,heart rate, muscles, blood pressure, blood glucose level and ECG are monitored, displayed and stored by our system.

Advantages

- *Ensure reliability and accuracy by field tested.*
- *The test results show that our system is able to measure the patient's physiological data with high accuracy.*
- *Here health care professional can monitor and access patient data from anywhere of the world at any time by internet connectivity.*

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CONCLUSION

A Smartphone based health monitoring system has been presented in this work. By using the system the healthcare professionals can monitor, diagnose, and advice their patients all the time.

The physiological data are stored and published online. Hence, the healthcare professional can monitor their patients from a remote location at any time. Our system is simple. It is just few wires connected to a small kit with a Smartphone. The system is very power efficient. Only the Smartphone or the tablet needs to be charged enough to do the test. It is easy to use, fast, accurate, high efficiency, and safe (without any danger of electric shocks). In contrast to other conventional medical equipment the system has the ability to save data for future reference. Finally, the reliability and validity of our system have been ensured via field tests. The field tests show that our system can produce medical data that are similar to those produced by the existing medical equipment.

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