International Journal of Scientific Engineering and Technology Research

ISSN 2319-8885
Vol.06,Issue.32
November-2017,
Pages:6771-6773

www.ijsetr.com

Android Based Health Care Monitoring and Alerting System

PAPINENI LAKSHMI PRASANNA[1], MD. YASMEEN[2]

[1]PG Scholar, Sreekavitha Engineering College, Khammam, Telangana, India.
[2]Assistant Professor, Sreekavitha Engineering College, Khammam, Telangana, India.

Abstract: The health care scheme is focus on the measurement and monitoring various biological parameters of patient's body like heart rate, oxygen saturation level in blood and temperature and android application, where doctor can continuously monitor the patient's condition on his smart phone using an Android application. Here we are using Wifi for Device to PC and Bluetooth used for mobile monitor for the doctor. Parameters like Heart Beat, SPO2 and Blood Pressure being monitored. Patient is alerted for any abnormality in the parameters using buzzer. In future, we can develop a big data base of all the patients of any hospital and these health parameters can be monitored continuously, and also the information is uploaded to the hospital server.

Keywords: LPC 2148, GSM, Blue Tooth, Pulse Sensor, SPO2 Sensor, LM35.

I. INTRODUCTION

In today's world, everyone is busy with their professional lives and they rarely pay attention to their health. With time technology has been evolving and getting cheaper day-by-day. There is an increasing need to have easily deployable and autonomous technical devices to support safety and well-being of people. Additionally and not negligibly, these new devices should also ease the burden of the respective professionals in their daily routines. Our everyday life is enriched by the impact of the smart phone, bringing data mobility. Wearable sensors with wireless data communication capability can be incorporated with the smart phone to collect current user's health status. A typical Android smart phone is equipped with the wireless connectivity to the Internet and also a Bluetooth module. An example of a wearable sensor can be an Electrocardiography (ECG) sensor to determine instant heart beat rate (HBR). Measurements of body temperature and current geographical location of the patient can be other valuable sources for remote diagnosis. Therefore, sensor data fusion and real-time information processing is highly desirable for remote health monitoring. Also, the Internet connection provides the flexibility and allows mobility in transferring the collected data to a central database. A central database can be used to store and analyze patients' health status. Also, it can be a server for medical experts to remotely access patients' data.

An embedded in typical smart phone contains a powerful processing unit, multiple concurrent wireless communication capabilities. This processing unit the smart phone can be used for various signal processing techniques, preliminary data analysis and patient diagnosis. However, utilizing these multiple sensors and the information that they provide is not straightforward, as the data is not easily accessible or available. In this paper, we present an idea to prepare a wearable device that will help to integrate the patient's current data with the Android Smartphone. Now-a-days hospitals access the data on the computers. So, in order to make the work paperless and to reduce the overhead, we introduce the idea of developing an Android application which will allow the concerned doctor to store and monitor the patient data.

II. RELATED WORK

A. Patient Monitoring Systems

A reliable transmission protocol for Bluetooth based wireless patient monitoring implement a Bluetooth device for fall monitoring, which integrates fall detection, indoor positioning, and Pulse monitoring etc. When the Triaxial accelerometer of the device detects a fall, the current position of the patient is transmitted to an emergency centre through a Bluetooth network. The physiological parameters such as oxygen level, Pulse rate and Temperature are obtained, processed using ARM7 LPC 2148 controller and displayed in a smart phone. In Microcontroller Based Health Care Monitoring System Using Sensor Network, Blood Presser reading, heart rate or body temperature exceeds the standard range for any patient, the system is able to notify using an alarming circuit. The whole system is controlled by microcontroller LPC2148. Light signal is used in sensor network section of this embedded system as light does not have any harmful effect on human body when it works in continuous mode. Pulse rate calculation and body temperature determination is also embedded in this system using sensor network. In Development of a Non-invasive Continuous Blood Pressure Measurement and Monitoring System, it measures blood pressure using volume oscillometric method and photoplethysmography technique during a long time period continuously. The rate of change of blood volume in an organ such as finger has a linear relationship with blood pressure. This rate of change of blood volume in finger is

measured by an optical sensor network which estimates blood pressure. Health monitoring systems are being proposed as a low cost solution. Such a system consists of physiological data that stores, process and communicate through a local manner such as smart phones, personal computers. Such systems should satisfy strict safety, security, reliability, and long term real-time operation requirements. This system is expected to monitor patient under critical care more conveniently and accurately for diagnosing which can be interfaced with android mobile to bring it under network system widely for the doctor to monitor the patient's condition sitting in his own office without being physically present near to the patient's bed.

A. Blue Tooth

Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz) from fixed and mobile devices, and building personal area networks (PANs). Range is approximately 10 Meters (30 feet).

- HC-05 is a more capable module that can be set to be either Master or Slave.
- These small (3 cm long) modules run on 3.3V power with 3.3V signal levels, They have **no** pins and usually solder to a larger board.
- The module has two modes of operation, Command Mode where we can send AT commands to it and Data Mode where it transmits and receives data to another blue tooth module.

III. SYSTEM ARCHITECTURE

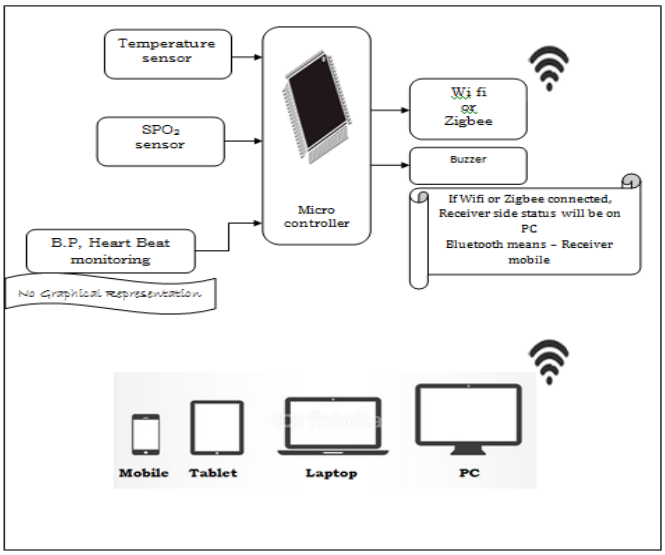

Fig.1.Block Diagram.

A. Body Temperature Sensor

The body temperature can be measured by putting sensor in contact with the body. Sensor used in the system is LM35. The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the degree centigrade temperature as shown in Fig.1. The LM35 thus has an advantage over linear temperature sensors calibrated in degrees Kelvin, as the user is not required to subtract a large constant voltage from its output to obtain convenient degree centigrade scaling. The LM35 does not require any external calibration or trimming. The LM35 is rated to operate over a 0° to +150°C temperature range. As the body temperature can't reach 150°C the LM35 can be used efficiently.

B. Pulse Rate Counter

Pulse rate of a body can be counted by change in blood flow in blood vessels. In the system the IR led and IR detector is used to fulfil the requirements of pulse rate counter. Putting any finger between the gaps causes change in IR light to be received at receive. The light must pass through finger and detected at other end. Now, when the heart pumps a pulse of blood through the blood vessels, the finger becomes slightly more opaque and so less light reached the detector. With each heart pulse the detector signal varies. This variation is converted to electrical pulse. This signal is amplified and pulses are counted.

C. SPO2 Sensor

A pulse oximeter is a medical device that indirectly measures the oxygen saturation of a patients blood and changes in blood volume in the skin, producing a photoplethysmograph. This sensor is useful in making Pulse oximetry, which is a test that measures what proportion of the oxygen-carrying molecules in the blood (called hemoglobin) are actually carrying oxygen. This is known as oxygen saturation or SpO2. One hundred percent oxygen saturation is attained when all hemoglobin in the blood is completely saturated with oxygen. This simple test does not require a blood sample and is called non-invasive.

IV. RESULTS

The results obtained by using the proposed system are

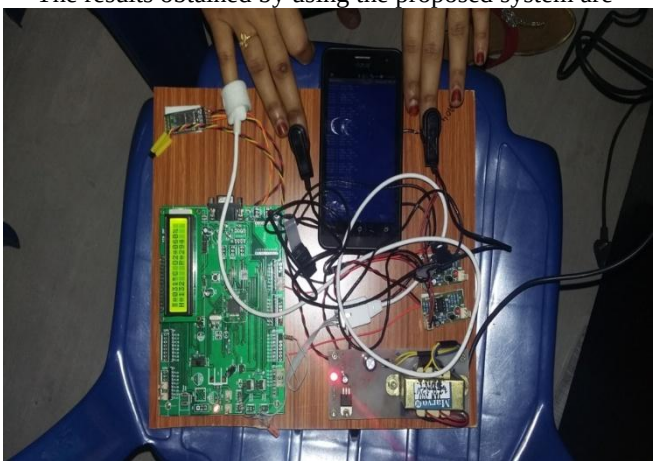

Fig.2. prototype model.

The above prototype model obtained by using the proposed system is final outputs as shown in Fig.2.

IV. CONCLUSION AND FUTURE SCOPE

This system reduces costs by enabling monitoring of patients, eliminating the need for utilization of expensive facilities, and reducing the need for transportation of patients to physicians and Medical centers. The health care monitoring application is presented which allows doctor to view his

patient's medical parameter remotely and dynamically in a Web page in real time and does not need to have any special requirement on his PC or mobile; all he needs is an internet access. In future we can create and save the database of the patient, if patient could come after 1, 2 years then doctor can treat the patient very well.

V. REFERENCES

[1] Tao Ma, Pradhumna Lal Shrestha, Michael Hempel, Dongming Peng, Hamid Sharif, and Hsiao-Hwa Chen*, "Assurance of Energy Efficiency and Data Security for ECG Transmission in BASNs", IEEE Transactions On Biomedical Engineering, Vol. 59, No. 4, April 2012.

[2] Shyr-Kuen Chen, Tsair Kao, Chia-Tai Chan, Chih-Ning Huang, Chih-Yen Chiang, Chin-Yu Lai, Tse-Hua Tung, and Pi-Chung Wang, "A Reliable Transmission Protocol for ZigBee-Based Wireless Patient Monitoring" IEEE Transactions On Information Technology In Biomedicine, Vol. 16, No. 1, January 2012.

[3] J. S. Choi and M. Zhou, "Performance analysis of Zigbeebased body sensor networks," in Proc. IEEE Conf. Syst., Man Cybern. 2010, pp. 2427–2433

[4] H. Wang, D. Peng, W. Wang, H. Sharif, H. H. Chen, and A. Khoynezhad, "Resource-aware secure ECG healthcare monitoring through body sensor networks",IEEE Wireless Commun., vol. 17, no. 1, pp. 12–19, Feb. 2010.

[5]Suhas Kale, c.S. Khandelwal, "Design and Implementation of Real Time Embedded Tele-Health Monitoring System", 2013 International Conference on Circuits, Power and Computing Technologies [ICCPCT-2013].

[6] M. Chaitanya Suman, K. Prathyusha, "Wireless ECG System Based on ARM LPC 2138 Processor", IJECT Vol. 3, Tssue I, Jan. - March 2012, ISSN: 2230-7109 (Online) I TSSN: 2230-9543 (Print).