A REVIEW ON- ANDROID BASED HEALTH CARE MONITORING SYSTEM

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ABSTRACT

We proposed a wireless human health care monitoring system to effectively monitor the health conditions of the patients which includes parameters such as Spo2, blood pressure, temperature, heart rate. This system basically presents two components (i) Wireless health care monitoring system and (ii) base station. There were several problems in the conventional system such as there was a difficulty in maintain the record of the patient and retrieve it whenever necessary. This system will save the data on the cloud or web server so the expert will be able to monitor the present data and at the same time will also be able the check the history of the patient. This system will also prove beneficial to reduce the queue size outside the expert's clinic and will help the doctor to monitor the physiological parameters of the patient in real time. The overall system is reliable, Low cost, portable, accurate and user friendly.

Keywords: Android Smartphone, Healthcare, wearable devices, wireless body area network, sensor nodes.

INTRODUCTION

Health care monitoring system serves an important mean to monitor the patient continuously even at remote places. Also due to the changing life, living in the large area, lack of time etc. are the various reasons that cause difficulty in monitoring the patients' health. According to the latest research the lonely life of the adults is increasing day by day due to various reasons such as disappearance of multidimensional family structure and busy schedule of the people which makes it difficult to keep continuous eye on the family member. Also if a patient is discharged from a hospital, there are conditions when the patients still has to be monitored either by caretaker or doctor. In such situation if the patients are called to the clinic them it increases the queue outside the clinic, causes inconvenience to patient as well as doctor. Wireless health care monitoring provides a key solution to all the limitation of the basic inherent structure. This paper is divide into sections II) Overview of system III) Proposed System VI) Conclusion

EXISTING SYSTEM OVERVIEW

Android based health care monitoring system [1] focuses on tele health care monitoring system for measurement of health parameters such as spo2, temperature, heart rate. In this system the monitored sensor data of the patient is stored onto the server from where the doctor can access the data with the help of the smart phone application. The body area network based on Android smart phone is used for evaluation of the medical parameters in real time[2] provides and makes use of technology in which the wireless body area network technology and it provides the complete physiological condition of the patients. These physiological conditions of the patients are forwarded using Bluetooth module and if there is any change occurs in this continuously monitored data then an alert message is directly forwarded to the care taker. A survey of E- healthcare information [3] focuses on the very significant issue in the healthcare monitoring system that is to monitor and optimize the data quality extracted from environment, which can improve the diagnostics and decision making. Real time Interactive medical consultation [9] uses CARA(Context Aware Real Time Monitoring System) to continuously keep an eye on the physiological parameters of the patient and then either to store the data on server or stream the data to remote location in real-time. The system also uses webcam for real time monitoring of the patient.

Microcontroller based health care monitoring [8] uses ATMEGA8L as a processing unit and sensor network. The system works on the threshold value of BP analysis, heart rate and body temperature i.e. whenever the value exceeds the threshold value, system notifies an alarm.

The personal information health care scheme [7] focuses on the physiological parameter monitoring such as ECG, Spo2, with the use of oscilloscope and J2EE. The system classified into three module section user interface, information processing system and data base. The main task of the system is to perform the predetermined diagnosis by first collecting the data from various sensors of the system through oscilloscope and process them.



WIRELESS COMMUNICATION

Due to modernization a smart mobile health care system also must use the wireless technology for the transfer of information received from the sensors to meet the requirement of wearable, portable health care devices [4]. According to the expected function of the device, choosing the wireless protocol is also a tedious task. There are many wireless technologies available in the market such as Wi-Fi, zigbee, GPRS, Bluetooth etc. each having some unique advantages and disadvantages.GPRS is a packet based wireless communication service that practically provides access to the data anywhere in the world but has some drawbacks such as, requires bulky power source, size of the modem is quite large. Therefore by using this system, healthcare system may get bulky and may limit the portability.

Bluetooth also known as IEEE 802.15.1 provides a bidirectional communication over a short range. This technology works on 2.4GHz ISM band. Bluetooth piconet works on the master slave principle wherein one device acts as a master while other 8 devices can participate as a slave. It is basically designed for short range communication with medium data rates. New Bluetooth low energy (BLE) advanced version i.e. Bluetooth 4.0 is low power, low data rate and short range protocol.

Zigbee also known IEEE802.15.4 is a low rate wireless solution with low power. It has an ability to corporate in a mesh network due to which it can establish large network where every node can act as a repeater. So long distance nodes can also communicate with each other.

Wi-Fi belongs to the IEEE 802.11 family popularly known for the wireless communication of data over the distance of 20 meters to 250 meters offering high throughput, encryption etc.

[4] Decision of which wireless communication to be used basically depends on following factors-

- Distance between communicating nodes.
- Amount of data to be transmitted.
- Number of devices communicating with each other.
- Power constraints.

PROPOSED SYSTEM DESIGN

This system basically consist of three sections, they are sensor section which are used for collecting and analyzing the information from the human body. The sensors used in this system are (a.) pulse oximeter which is used for indirectly measuring the oxygen level in the blood and also monitors the changes in the blood volume in the skin, producing photo plethysmograph[8]. (b.)The temperature sensor DS18B20 is a digital thermometer which provides 9-bit to 12-bit Celsius measurement. (c.)The accelerometer sensor i.e. MMA7361 which is IC based capacitive sensor used to measure tilt

measurement, in third system used to measure fall and motion measurement. (d.)And the heartbeat sensor designed to give digital output of heart beat when a finger is placed on it.

The second section consists of the controller part which is used for processing the data, store it in memory and forward the data. The controller used is ATMEGA328



Fig. 2: Proposed System Architecture

The third part consist of android smartphone which is receiving the controller stored data using the on the web server for remote access for the purpose of medical support. The overall system architecture is as shown in fig.2

	Module	Application	Image	
	Accelerometer	For Fall detection and tilt		
4		measurement		
			NOME	
	DS18B20	To continuously monitor body		
	₽	temperature	GUD Vide Data	
	Pulse Oximeter	For monitoring oxygen ratio in		
		01000 1.2. 5702	1A	

Table 1: Specification of healthcare System

Heart rate Sensor	To measure heart beats	1157 enner Filmen an Filmen and Filmen and F
Atmega328		
Wi-Fi Module	To transmit the data forward wirelessly	

CONCLUSION

In this paper a system is proposed with low complexity, highly portable, reliable, with low power consumption for the monitoring of health conditions of the patient and it can also monitor the health conditions of the patients in real time. The use of wireless technology increases the functionality of the whole system, by sending the irregularities of the users health. It also serve beneficial in reducing queues, minimize or avoid human error, to maintain the past data of the patient effectively, to give modern facility in remote community.

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