A SURVEY ON HEALTH MONITORING SYSTEM

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ABSTRACT

In this health monitoring systema wireless patient's health parameters which consists of Heartbeat, Temperature sensor, and BP sensor. Now a day's many human beings in India suffers from diseases like heart attack, diabetes, cancer and reason behind that, they are not getting proper and timely monitoring in hospitals. Long waiting hours at the hospitals patient monitoring are well known issues. The issues demands for a health monitoring system which can monitor the daily routine health parameters like temperature, heart rate and BP monitoring seamlessly on android application. With progressing in technology various monitoring systems have come up and provided ease to the individuals.

Keywords: Accelerometer sensor, Heartbeat sensor, Raspberry Pi, Respiration sensor, Temperature sensor

INTRODUCTION

Population aging is inevitable, and with the progress of civilization and medicine, the primary cause of death has changed from infectious to immedicable diseases. Thus, rescuing elderly patients in the event of accidents and illness are of primary importance. Improvement of healthcare, both at home and in hospital, have become more important for patients. Telemedicine information systems have become increasingly essential, particularly intelligent systems used to provide high quality healthcare monitoring, which save on medical and manpower costs. With newer technologies, the computer based portable embedded devices have taken our healthcare to another level, So that people may manage their daily routine check-up at home. In addition, this is important to provide people continuous monitoring in non-clinical environments. However, such health management only can be achieved if the computer based portable monitoring devices with smart sensor technologies are available.

LITERATURE SURVEY

Ananda Mohan Ghosh et al. [1] demonstrated a health care system for hospital management that allows relatives and doctors to remotely monitor the health

condition of a patient via the internet using Arduino Uno connected with E-health sensor shield kit and Phi gets interface kit. However, it does not provide email and SMS alert to an emergency contact list.

In [2], P. Kumar et al. proposed a raspberry pi controlled patient monitoring system where heartbeat, respiration, temperature and body movement of the patient is being measured using sensors and displayed on the screen using the putty software. However, it doesnot contain the alarm notification for providing prescribed drugs to the patient which is a limitation of this system.

Felipe Fernandez et al [3] discuss the probable problem which may be encountered if we continue to create an IoT based health care system. It also discusses the reliability of IoT based systems, which is an important issue in health emergencies.

In [4],S. Siva et al. proposed a solution to monitor patients' health care condition using the smart hospital system. The patients' health condition can be monitored with the help of a spark kit. The system records the temperature and heart rate of the patient and triggers an alert if the parameters go out of a predefined range.

SarfrazFayaz Khan [5] proposed healthcare monitoring system using IoT and RFID tags. In this system, a combination of microcontroller and sensors has been used to supervise and weigh the health condition of the patient and to increase the power of IoT. However, it does not include medication and precautions according to the patient health condition by controlling the appliances.

Boyi Xu et al. [6] presented the challenge of reading and storing data in the IoT platform and ways to solve it. As it is known that most of the IoT based systems include reading real-time data at regular intervals and health care is one of such cases. Under this scenario due to the different kinds of data and regular input of data it becomes more difficult to interpret and sequentially store the data in proper format.

In [7], Freddy Jimenez et al. proposed a system that monitors the health of a patient and sends relevant information and alerts to doctors, family members and other important people. However, it does not include the appliance control part, it only deals with the monitoring part and informing the relevant people about it.

Danilo F. S. Santos et al. [8] presented the Personal Health Devices (PHD) which help in retrieval of proper data from the actual sensors. Their proposed work provides a standard architecture that actually helps in sharing of data between the systems like mobile phones and cloud databases.

SYSTEM ARCHITECTURE

General block diagram of health monitoring system (HMS) is depicted in figure 1. HMS consists of different sensors viz. temperature, respiration, heartbeat, and accelerometer. These sensors send signals to the Raspberry Pi. As these signals levels are low, amplifier circuit is used to gain up the signal and transmit the signals to the Raspberry Pi. Patients' body temperature, respiration, heart rate, and body movements are measured using respective sensors and can be monitored using Raspberry Pi as well as through internet anywhere in the world. All sensors do not have the same power to operate, so the transformer is used for operate these sensors. The power supply is connected to the specific sensors.
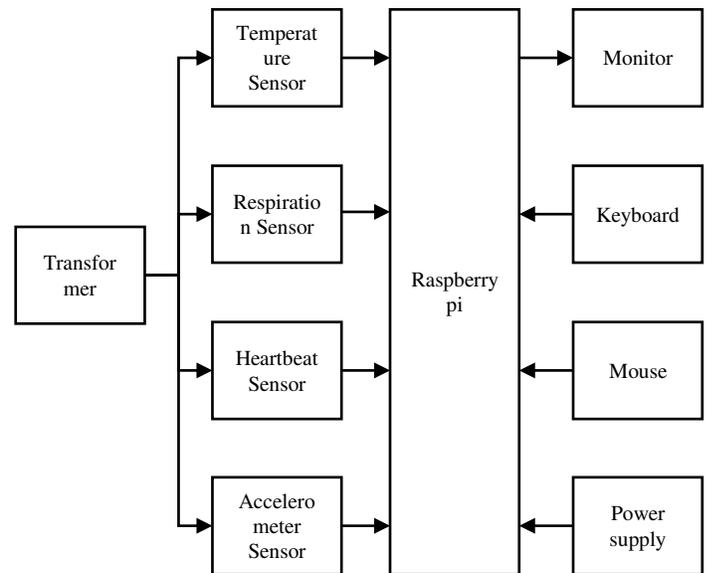
Fig 1: Block diagram of Health Monitoring System using Raspberry Pi

Advantages:
  A. Better access to healthcare
  B. Improved quality of care
  C. Peace of mind and daily assurance
  D. Improved support, education and feedback

Applications:
  A. Reduces Risk of Heart failures
  B. Infertility
  C. Prevent Dementia and Falls

CONCLUSION

This paper reviewed the state-of-the-art in R&D of health monitoring systems. Although it is generally accepted that these systems have the potential to revolutionize health care, by realizing low-cost personal health monitoring, the current study indicates the fact, that there are still a lot of issues that need to be resolved for this technology to become more applicable to real-life situations. The main challenges, which future researchers will need to address, are pointed from the presented discussion.

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