

Design of Health Rate Monitoring System using Wearable and Ecological Sensors

Priyanka Parihar

M Tech Student

*Department of Electronics & Communication Engineering
Jiwaji University, Gwalior (M.P.)*

Neetu Sikarwar

Head of the Dept.

*Department of Electronics & Communication Engineering
Jiwaji University, Gwalior (M.P.)*

Abstract

As the health rate service evolves, technology provides easily available health data, which can help people, deal with health concerns. Wearable sensors are used for this purpose. Wearable systems are used for health and rehabilitation practices, especially useful for wearable wear sensors, quick response times, minimum sample pre-treatment and high voting is included. Wearable sensor equipment attached to Smartphone applications is already a part of sports personnel. Sports personalities use wearable systems like a tired oximetry (a non-invasive way to monitor O₂ infection), which helps them optimize their performance. Generally, wearable sensors and portable computing devices offer the possibility of giving patient health information on time with the doctors as well as for the patients. By supplying real-time health information, a sensor primarily based healthcare information infrastructure can be used to effectively maintain patient medical records based on the information collected on a relatively stable basis. The proposed solution for this method combines the environmental and wearable sensors so that the patient's health status can be monitored around the patient and at the same time. This will allow the broad understanding of the condition of the patient and the expert on both subjects to take care of the patient.

Keywords: Health rate, Wearable sensors, Ecological sensors, health rate monitoring system, health status, and health Concerns

I. INTRODUCTION

The reason of this article is to design a health care system that integrates together wearable sensors and ecological sensors, that offers a comprehensive diagnosis of the patient's situation in distant healthcare monitoring.

Frequent health rate monitoring systems thus far away mixed up utilize of electronic sensors for the sensing and monitoring of the different physiological parameters of the person body. Still, though these systems do offer the essential records for the health check practitioner to facilitate the patient, it still might not be sufficient for the mainly helpful treatment. Thus additional comprehensive information of the patient is required, to the amount that still the environmental factors play a major role.

Different methods with similar goals have been researched and implemented.

- 1) Shibu J and Ramkumar.R Proposed is a technique that offers a non-invasive approach to monitoring health care, which allows a person to keep a record of their own health records through the use of smart cards. This method effectively reduces the timing of patients, allowing us to spend within the hospitals, smart card reader to swipe the smart card from any place to the health standards.
- 2) Marco Messina and Don Martin describes the implementation and validation of an environmental and health monitoring system based on a Wireless Sensor Network (WSN).The result predictable by their system combines ecological and medical sensors so as to monitor together with the neighboring space of the patient and also the patient's health position at the similar time. A sequence of experimental situations was residential and enforced in an extremely laboratory setting. The termination considers the execution of opportunity enhancements to the fitness execution association by introducing fresh sensors and appointment pursuit capabilities, and by collection action alarm triggering algorithms and higher safety techniques.

II. RESEARCH GAP

Many fitness monitoring systems suggest the opportunity of restricted sensing capabilities and are not reserved in intelligence also for the require to contain environmental factors. Many systems involved in monitoring health care are related to using a closed location approach with inconvenient sensors, many of which do not like to wear continuously or they are involved in carrying an extra communication PDA to make it portable. The system is not fully implemented.

III. BLOCK DIAGRAM

A. Transmitter

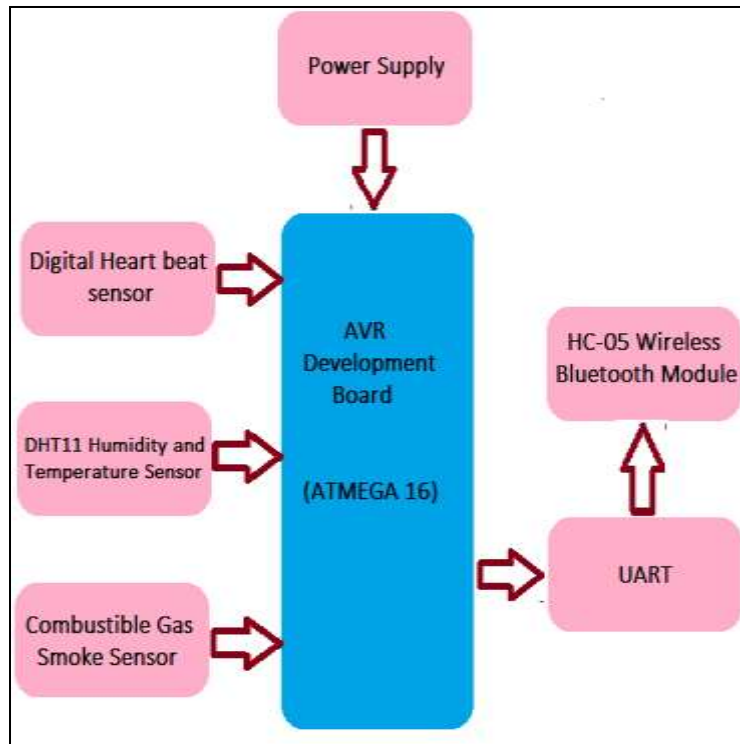


Fig. 1: Block Diagram of Transmitter System

B. Receiver

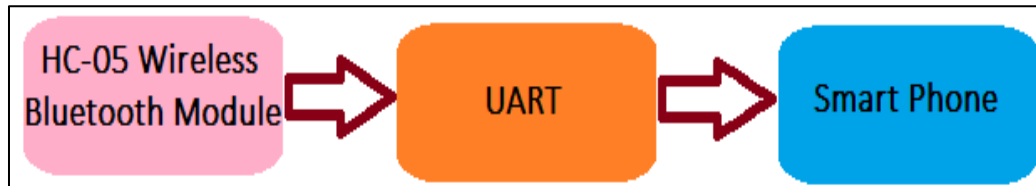


Fig. 2: Block Diagram of Receiver System

IV. METHODOLOGY

To implement a remote fitness monitoring system, these sensors are designed to examine medical parameters such as blood pressure, heart rate, and temperature and have been interfaced to the microcontroller ATMEGA 16. This microcontroller is inbuilt ADC that converts sensor input analog signal to digital signals.

These days, wearable sensors such as the heart rate monitor and the pedometer are in general use. Many products are already on the market, such as life condition, developed by Vivo Matrix, Body Monitoring System developed by Body Media and NIKE-Apple iPod Sports Kit which provides personal feedback control on performance during an exercise period.

Heart Beat Sensor provides an easy way to know the usefulness of the heart. Heart beat sensor is designed to give a digital output of heart failure when a finger is placed on it. It includes a super bright red LED and a light detector. The LED should be super bright because the maximum light must be spread in the finger and detectable by the detector. When blood pumps a pulse of blood through blood vessels, the fingers become slightly more opaque and reach such a low light detector. Detector signal varies with each heart pulse, this variance varies in the electric pulse. This digital output can be associated to uc straight to calculate the Beats Per Minute rate. This signal is improved and trigger during an amplifier which output +5Volt logic point signal. The output signal is also shown by a LED which flashes on every heartbeat.

The proposed plan has a major benefit:

- 1) Introducing ecological sensors that assemble environment information will assist in a study of the health data.
- 2) The ecological sensors mostly consist of temp. Sensors, humidity sensors, and in the case of urgent situation, an alarm indication commencing smoke detectors. It occurs to be extremely significant that the addition of unique circumstances sensors.

The procedure data commencing from the particular medical sensors and the ecological sensors are currently sent to ATmega16 Microcontroller to facilitate the received data and show on the development board, however extra highly currently proceed to the next stage of the monitor system that is to talk the expected data to the patient and doctor. The received signal is a talk by easy means of Bluetooth using USART serial communication. In the planned scheme we utilize two Bluetooth modules and may work as either a sender or a receiver. We should note down communication is feasible simply after one Bluetooth work as a sensor and the other as a recipient. Communication is not feasible for a couple of sources or a couple of recipients. The received data is sent to the particular Smart cellular phone via USART. The Smart cellular phone is competent of the display, monitoring, copy, and distribution they received data, therefore save cost on display and copy devices. This result not only gives patient extra independence other than also provides early on analysis of cardiac disease by its alarming property.

V. CONCLUSION

Many types of research and efforts have also gone on to create a better and better health care monitoring system for patients far and away. Only some of these investigations consider the ecological issue that has an effect on the fitness of the human body. Thus, this letter advocates the need for using medical, ecological sensor, technique and different successes. Apart from this, by taking advantage of the advanced technology available for the common people, a remote health care monitoring system capable of making wireless patients and the smart phone of both the doctor with wireless equipment, it is possible that you can click immediately Can provide an immediate diagnosis.

VI. FUTURE SCOPE

To implement future improvements in health surveillance network, we can introduce nascent sensors such as cameras, ECG sensors as well as location tracking capabilities. We also have to unify advanced security technologies in alarm triggering algorithms and wireless sensor networks. The plan which will be necessary for the health monitoring environment. Another aspect to consider is to include a wearable sensor or wearable sensor, which can be helpful in improving the already existing system, which can be cheaper and more diversified in use.

REFERENCES

- [1] Shibu J, Ramkumar.R, —ATM Based Remote Healthcare Monitoring Systeml, 2014, Electronics and Communication Systems (ICECS), 2014 International Conference.
- [2] Jayalakshmi R, Mahalingam D, Rajeswari A, —Advanced Health Monitoring and Receiving Using Smartphone in Global Networksl, 2014, International Journal of Engineering Development and Research.
- [3] S.Saravanan, —Remote Patient Monitoring in Telemedicine using computer communication network through Bluetooth, WiFi, Internet Android Mobilel, International Journal of Advanced Research in Computer and Communication Engineering Vol. 3, Issue 7, July 2014.
- [4] PrathameshDinkar, Abhishek Gulavani, SourabhKetkale, Pratik Kadam, SheetalDabhade, —Remote Health Monitoring using Wireless Body Area Networkl, International Journal of Engineering and Advanced Technology (IJEAT), ISSN: 2249 – 8958, Volume-2, Issue-4, April 2013.
- [5] Sandeep Kumar Vashist, E. Marion Schneider and John H.T. Luong, —Commercial Smartphone-Based Devices and Smart Applications for Personalized Healthcare Monitoring and Managementl, Diagnostics 2014, 4, 104-128; doi:10.3390/diagnostics4030104.
- [6] Ademola Philip Abidoeye, NureniAyofeAzeez, AdemolaOlusolaAdesina, Kehinde K. Agbele, Henry O. Nyongesa, —Using Wearable Sensors for Remote Healthcare Monitoring System,Journal of Sensor Technology, 2011, 1, 22-28.
- [7] Ming-ZherPoh, Kyunghye Kim, Andrew Goessling, Nicholas Swenson, Rosalind Picard —Cardiovascular Monitoring Using Earphones and a Mobile Device, 2010, IEEE Pervasive Computing.
- [8] Marco Messina, Yen Yang Lim, Elaine, Lawrence, Don Martin, FrankKargl, —Implementing and Validating an Environmental and Health Monitoring Systeml 2008 IEEE, Information Technology: New Generations, 2008. ITNG 2008. Fifth International Conference on Information Technology: New Generations.
- [9] Veysel Aslantas, Rifat Kurban, Tuba Caglikantar, — A LOW-COST WIRELESS HEALTHCARE MONITORING SYSTEM AND COMMUNICATION TO A CLINICAL ALARM STATIONl, 2007, Journal of the Faculty of Engineering and Architecture of Gazi University.