NOVATEUR PUBLICATIONS
INTERNATIONAL JOURNAL OF INNOVATIONS IN ENGINEERING RESEARCH AND TECHNOLOGY [IJIERT]
ISSN: 2394-3696
VOLUME 4, ISSUE 5, May-2017

IMPLEMENTATION OF HOME MONITORING SYSTEM USING LABVIEW FOR CHF

KISHOR RAMNATH GAWANDE
Electronics and Tele Communication Department, Devgiri Institute of Engineering and Management Studies, Aurangabad, Maharashtra, India

S.N.GAIKWAD
Assistant Professor and Electronics and Tele Communication Department, Devgiri Institute of Engineering and Management Studies, Aurangabad, Maharashtra, India

ABSTRACT:
Heart failure has found one of severe cause of hospitalization. The charges for hospitalization are high and most of the times it has be observed once the patient has got discharge from the hospital, they avoid taking care of themselves. It has observed that the patients are increasing continuously for this disease due to the changed life style. After getting discharge from hospital it is costly to arrange the periodic visits of doctors to home. The continuous and unavoidable care is the need of such patients. Hence it is necessary to develop the system which is closely observing the health of the person and tracking the needs of the patient. Authors have proposed the system with the help of Labview to address this problem. The application of the Labview for the automatic home monitoring was implemented by the researchers previously. Authors are trying to implement the same environment for the monitoring of human. Remote monitoring will be one of the best ways to handle the patients in serious diseases without trouble.

KEYWORDS: heart failure, home monitoring, telemonitoring, remote monitoring, disease management, etc.

INTRODUCTION:

The chronic heart failure (CHF) is found very severe in India and around 5 to 7 percent of Indian population is facing it. Growth of any country is depended on per capita income of the country. In the world of globalization every country is trying to develop very fast. In the growth of the countries the industries are playing a vital role. By considering the severity of the disease we can understand that the expenses for hospitalization and treatment are very costly for this disease. The percentage of the patients observed will be increasing with the increase in the age of human being. If we consider the current situation over last ten years, most of the people will hospitalized and have got severe stroke after discharge from the hospital. Once the patient is discharges, he/she may have less contact with the doctor. Indians are having the tendency that, unless and until some health issue arrived, they will avoid meeting the doctor for general health checkups. Once people are cured from the disease they are least bother about the re-arrival of the same health issue and hence there is a need of the system which can monitor human health at home. The previous researchers have proven the chances of re-arrival of the heart failure are about 45% once cured. While its necessary to have monitoring system. A unique monitoring system was developed by using MSP430G2552 microcontroller. The project module uses a portable sensor module which is placed in the patient's body (finger). This method is very much useful for patients who are prone to heart failures. Our module is useful for patients even when they are in some other places other than hospital. It gives immediate indication of low and high blood pressure rates and heart rates beyond certain limits to the patients as well as to the Hospital Information System. Transmitter and receivers are used in most of the recent heart rate monitors. In early plastic straps, either water or liquid was required to get good performance. Blood pressure rate is supervised by a pressure sensor which consists of testing belt. Many diagnostic and therapeutic devices incorporate pressure sensors made with Piezo resistive semiconductor technology. The pulse rate and blood pressure are transferred to the Hospital Information System by using Lab VIEW technology. Admission to hospital with heart failure has more than doubled in the last 20 years, and it is expected that CHF patients will double in 2030. Heart failure hospitalizations are found around 2 percent of the total hospitalizations.

The CHF management accounts for 2% of the total healthcare expenditure, and hospitalizations represent more than two thirds of such expenditure. The current healthcare model is mostly in-hospital based and consists of periodic visits. Previous studies pointed out that in patients with a discharge diagnosis of heart failure, the probability of a readmission in the following 30 days is about 0.25, with the readmission rate that approaches 45% within 6 months 2]. System requires the Heart beat sensing device for proper identifying the Heart beat. It is also necessary that specification should match MSP430G2552 requirements. For sensing device, we require proper range of input and output voltage as well as current ratings that should be compatible to MSP430 G2552 ratings.

Heart rate is a very vital health parameter that is directly related to the soundness of the human cardiovascular system. This project describes a technique of measuring the heart rate through a fingertip using a MSP microcontroller. The signal can be amplified further for the microcontroller to count the rate of fluctuation, which is actually the heart rate. The sensor unit consists of an infrared light-emitting-diode (IR LED) and a photo diode, placed side by side, and the fingertip is placed over the sensor assembly, as shown below. So, every time the heart beats the amount of reflected infrared light changes, which can be detected by the photo diode.

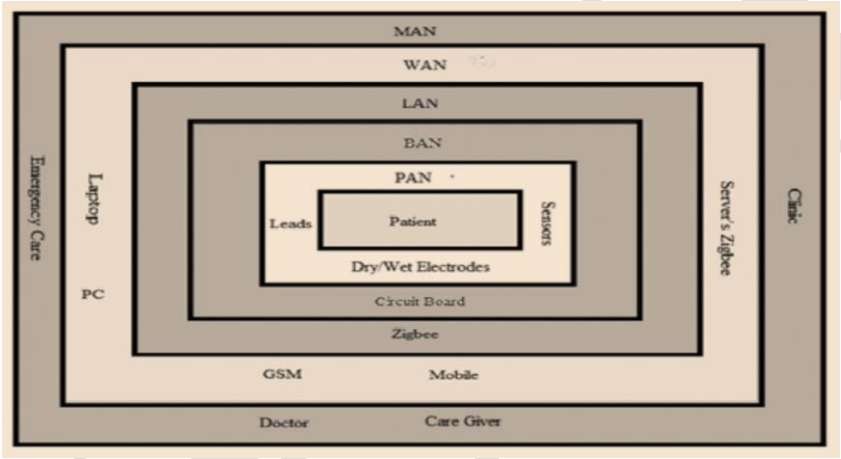

Fig. 1: OVERVIEW OF MONITORING SYSTEM

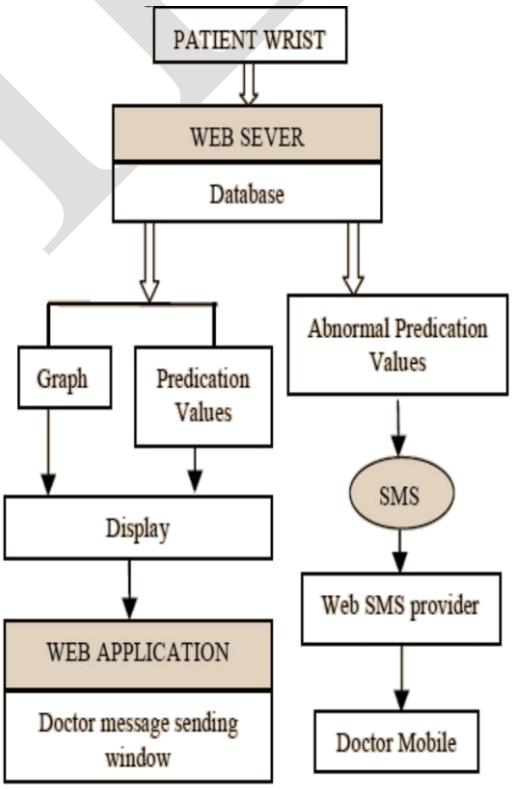

Fig. 2: WORK FLOW OF THE PROPOSED SYSTEM

RESULTS:

In this project named Chronic heart failure monitoring system .The heart rate of a patient is detected and taken by the heart beat sensor which will give its output to the op amp as the amplitude of the signal is small so the op amp will increase its amplitude which will be processed by the microcontroller. Microcontroller will initially convert this signal in the digital form and process it the output of the micro controller is given to the Lab view software which will showcase the output of the patients heart beat in the graphically form. In the same way the ECG and the temperature view is also given and for sensing the temperature LM35 is used as a sensor in the circuit. By the graphical view of these parameters the doctors detect the stage of the patient and the severity of the patients' heart attack whether it is first stage or more. The stages are checked in the following manner.

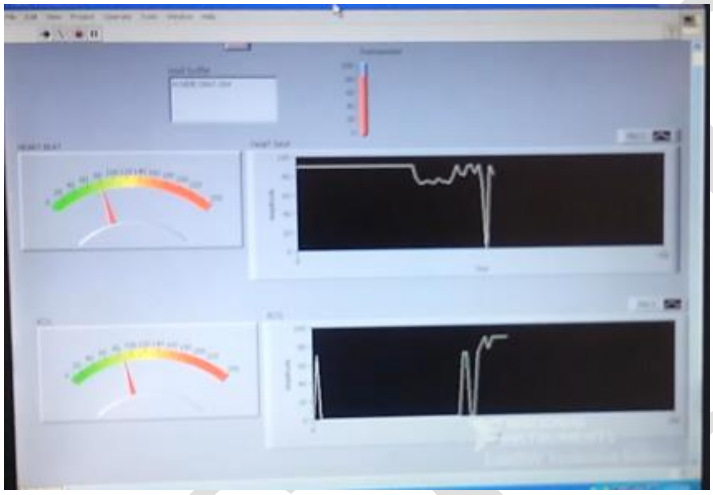

Fig. 3: CHRONIC HEART FAILURE MONITORING SYSTEM RESULTS

CONCLUSION AND FUTURE WORK:

In the existing system all the needs and the precautions needed to be taken for a heart patient are considered where the considerable and largely unmitigated. Home monitoring of the HF patient can extend from home visitations and promotion of self-care to telemedicine and remote monitoring of external or implantable devices. Due to this system the people in the rural areas does not need to visit the hospitals in the urban areas for daily routine check up as there is a problem of transportation and this system is computerized so all the check-up records are stored in order for the doctors to analyse the patients health. The proposed system simple and efficient method of analysing the patient's heart rate, temperature, ECG, with the accuracy of 95%.The implementation of the system is proved the system is portable and cost effective some modification is necessary to prove the system reliability.

REFERENCES

1) E. Yavuz, B. Hasan, I. Serkan and K. Duygu. "*Safe and Secure PIC Based Remote Control Application forIntelligent Home". International Journal of Computer Science and Network Security, Vol. 7, No. 5, May 2007.*

2) K.Tan, T.Lee and C.Yee Soh. *"Internet-Based Monitoring of Distributed Control Systems An Undergraduate Experiment". IEEE Transaction on Education, Vol. 45, No. 2, May 2002.*

3) N. Sriskanthan and Tan Karand. "*Bluetooth Based Home Automation System". Journal of Microprocessors and Microsystems, Vol. 26, pp.281-289, 2002.Official Android developer website: http://www.developer.android.com Official page for scm RTOS development: (http://scmrtos.sourceforge.net/ScmRTOS)*

4) R.Piyare, M.Tazil. *"Bluetooth based home automation system using cell phone". 2011 IEEE 15thInternational Symposium on Consumer Electronics.*

5) Shiu Kumar" *UBIQUITOUS SMART HOME SYSTEM USING ANDROID APPLICATION" International Journal of Computer Networks & Communications (IJCNC) Vol.6, No.1, January 2014.*

6) Subhamay Sarker, Mithun Chakraborty and Anindita Banerjee "*Low Cost Embedded System/Android Based Smart Home Automation System Using Wireless Networking", http://www.irphouse.com.*

7) The official Bluetooth website from Bluetooth SIG www.Bluetooth.com*, Date viewed: March 21, 2001, Bluetooth Specification Version 1.1.*