Electronic Health Monitoring System

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ABSTRACT

This chapter to introducing the health monitoring system. It presents an overview of health care technologies that enable the advanced patient data acquisition and management of medical information in electronic health records. The chapter presents the most important patient data saved. While special focus is placed on new concept of intelligent healthcare platform (i.e, advanced data mining, agents and context- aware system) that provide enhanced means of medical data interpretation and manipulation. The chapter is concluded with the areas in which electronic health care system are anticipated to make a difference in the near future.

Keywords : Temperature sensors, Pressure sensor, Heart beat sensor, GSM,monitoring proteus8, LCD.
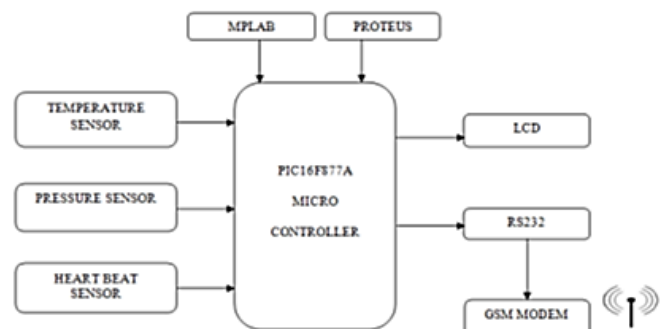
I. INTRODUCTION

In this era of ubiquitous and mobiles computing vision in biomedical informatics is toward achieving two specific goals; the availability of software applications and medical information anywhere and anytime and invisibility of computing. Both this goals leads to the introduction of electronic health care computing concept and features E-health applications. Applications and interfaces that will be able to automatically process data provide by medical device and sensors, exchange knowledge and make intelligent decisions in a given context are strongly desirable. Natural user interactions with such applications are based on anatomy, avoiding need for the user to control every action, and adaptivity, so that they are contextualized and personalized, delivering the right information and decision at right moment. All the above recently introduced features provide added value in modern electronic healthcare systems

II. ELETRONICS HEALTH MONITORING SYSTEM

Nowadays, the health care sensor are playing essential role in hospitals. The patient monitoring system is one of the major developments because of its innovative technology. An automatic wireless health monitoring system is used to measure patient's body temperature and heartbeat by using Embedded Technologies. The proposed system uses both the sensors like heartbeat sensors and temperature sensor. These sensors mainly involves in monitoring the condition of the patient.

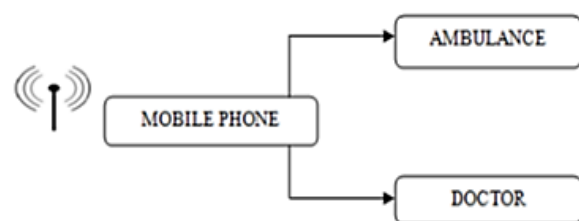Block diagram of transmitter-

Block diagram of receiver

Figure 1

III. SENSOR DISCRIPTION

A. **Temperature Sensors** - LM35 sensor is used to measure to the temperature of the human body. Body temperature change depend upon on the time to time and day to day,but no more than 1.0°C. For

many diseases such as typhoid, viral fever etc, so it needs to monitor continuously the patients. It also used to self monitoring the patients easily. If the temperature level is too low, the patient needs medical emergency. Because too low temperature leads to death occur and also for high level. It is measured in degrees

B. Celsius(°C).

Category	Temperature Range (°C)
Hypothermia	<35.0
Normal	36.5 – 37.5
Hyperthermia	> 37.5 – 38.3
Stage 1 hypothermia	35-36
Stage 2 hypothermia	34 – 33
Stage 3 hypothermia	32
Hyperpyrexia	>=40.0 -41.5

Table- 1.1 classification of temperature range

C. Pressure Sensor - The pressure sensor is used to measure systolic and the diastolic pressure level using the device. Systolic is the higher of two number measure the pressure in the arteries when the hearts beat. Diastolic is the lower of the two numbers measure in the arteries between heart beats. It is measured in millimeter mercury (mmHg). Blood pressure changes from minute to minute.

Classification of blood pressure category	Systolic/diastolic pressure (mmHg)
Hypotension	<90/60
Desired(Normal)	90-119/60-79
Prehypertension	120-139/80-89
Stage 1 hypertension	140-159/90-99
Stage 2 hypertension	160-179/100-109
Hypertension	>=180/>=110

Table-1.2 classification of pressure ranges

The symptoms of low blood pressure are dizziness of lightheadedness, fainting (syncope), lack of concentration, Nausea, Depression, Thirst, Cold, Clammy, pale skin, Blurred vision, Rapid, Shallow breathing, Fatigue.

D. Heart Beat Sensor- Hearth beat sensor is used to measure the pulse rate of the hearth in digital output. When a finger is placed on it. Led is used to detect the heart beat of the person is 78 bpm. It is measured based on the beats per minute. If the heart beats more than 100 BPM causes tachycardia. If heart beats less than 60 BPM causes bradycardia. The information about the heart rate of the person with time.
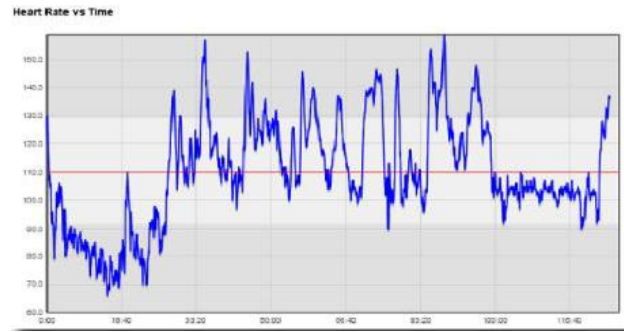

Figure 2. Real time vs Time

IV. METHODS AND MATERIAL

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V. RESULTS AND DISCUSSION

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VI. CONCLUSION

In our simulation, results are easily obtained using PROTEUS software provide the real time monitoring of the patients. We get the input from sensors and processed using microcontroller. For emergency send the intimation to the caregivers. This system is low cost, self monitoring device and used in remote areas efficiently.

VII. REFERENCES

[1]. S. Gayathri, N. Rajkumar, V. Vinothkumar, "Human health monitoring system using sensors," vol.02, 08 Nov 2015.

[2]. K. Malhi, S.C. Mukhopadghyay, J. Schnepper, M. Haefke, and H. Ewald, "A ZigBee-based wearable physiological parameters monitoring system," IEEE Sensores J., vol.12, nnno.3,pp. 423-423,mar.2012.

[3]. P.A. Shalitis, A. T. Reisner, and H. H. Asada, "Cuffless blood pressure monitoring using hydrostatic pressure changes," IEEE Trans. Boimed. Eng,vol.55, no.6 pp.1775-1777,Jun.2008.

[4]. Juam M. Corchodo, Javier Bajo, Yanira de Paz, Dante I. Tapia: "Intelligent Environment for monitoring

Alzheimer patients, agent technology for healthcare", to be published in decision support system, article available online at www.scencedirect.com.

[5]. Scott Mitchell, Mark D. Spiteri, Jhon Bates and George Coulouris: context aware multimedia computing in the intelligent hospital. In proc. SIGOPSEW200, the Ninth ACM SIGOPS European workshop (2000).

[6]. Ilias Maglogiannis, "introducing intelligent in electronics health care systems; states of the art and future trends,".

[7]. Raghavan, A. and Cesnik, C. E., \Review of guided-wave structural health monitoring," Shock and Vibration Digest, vol. 39, no. 2, pp. 91-114, 2007.

[8]. Carden, E; Fanning P (2004). "Vibration based condition monitoring: a review". Structural Health Monitoring. 3 (4): 355–377.

[9]. Montalvao, D., Maia, N. M. M., and Ribeiro, A. M. R., \A review of vibration- based structural health monitoring with special emphasis on composite materials," Shock and Vibration Digest, vol. 38, no. 4, pp. 295-326, 2006.

[10]. Fan, W. and Qiao, P. Z., Vibration-based damage identification methods: A review and comparative study," Structural Health Monitoring, vol. 10, no. 1, pp. 83-111, 2010.

[11]. Dixit, A. and Hodges, D. H., A general damage theory: Solution of nth-order equations using unified framework," Mechanics Research Communications, vol. 38, no. 7, pp. 486-493, 2011.

[12]. Dixit, A. and Hanagud, S., Damage localization by isolating the part of the response due to the damage only," Journal of Applied Mechanics, vol. 80, no. 1, p. 011015, 2012

[13]. Farrar, C. R.; S. W. Doebling; D. A. Nix (2001). "Vibration-Based Structural Damage Identification". Philosophical Transactions of the Royal Society A. 359 (1778): 131–149. doi:10.1098/rsta.2000.0717.

[14]. Sohn, Hoon; Farrar, Charles R.; Hemez, Francois M.; Shunk, Devin D.; Stinemates, Daniel W.; Nadler, Brett R.; Czarnecki, Jerry J. (2004). A Review of Structural Health Monitoring Literature: 1996–2001 (PDF). Los Alamos, NM: Los Alamos National Laboratories. Retrieved 2010-07-10.