Android Based Portable Health Support System

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Abstract*— In the last decade the healthcare monitoring systems have drawn considerable attentions of the researchers. The prime goal was to develop a reliable patient monitoring system so that the healthcare professionals can monitor their patients, who are either hospitalized or executing their normal daily life activities. In this work we present a mobile device based wireless healthcare monitoring system that can provide real time online information about physiological conditions of a patient. This system is designed to measure and monitor important physiological data of a patient in order to accurately describe the status of her/his health and fitness. The system mainly consists of sensors, the data acquisition unit, microcontroller and software (i.e., LabVIEW). The patient's temperature, muscles, blood pressure, blood glucose level etc. will be monitored, displayed, and stored by our system. The field test will be done of the proposed system to ensure reliability and accuracy

Keywords*— remote healthcare, mobile device, patient monitoring, LabView.

I. INTRODUCTION

Health is one of the global challenges for humanity. According to the constitutions of World Health Organization (WHO) the highest attainable standard of health is a fundamental right for an individual. Healthy individuals lead to secure their lifetime income and hence to increase in gross domestic product and in tax revenues. Healthy individuals also reduce pressure on thealready overwhelmed hospitals, clinics, and medical professionals and reduce workload on the public safety networks, charities, and governmental (or non-governmental) organizations.

To keep individuals healthy an effective and readily accessible modern healthcare system is a prerequisite.A modernized healthcare system should provide better healthcare services to people at any time and from anywhere in an economic and patient friendly manner. Currently, the healthcare system is undergoing a cultural shift from a traditional approach to a modernized patient centredapproach. In the traditional approach the healthcare professionals play the major role. They need to visit he patients for necessary diagnosis and advising. There are two basic problems associatedwith this approach. Firstly, the healthcare professionals must be on site of the patient all the time and secondly, the patient remains admitted in a hospital, wired to bedside biomedical instruments,for a period of time.

In order to solve these two problems the patient oriented approach has been conceived. In this approach the patients are equipped with knowledge and information to play amore active role in disease diagnosis, and prevention. The key element of this second approach is a reliable and readily available patient monitoring system (PMS).The need for a real time recording and notification of vital signs of a patient is of prime importance for an effective PMS. By encapsulating the advantages of modern bioinstrumentation, computers and telecommunication technologies a modern PMS should acquire, record, efficient, timely, and hencean active database system must be associated with the PMS.

In this Paper a smartphone based wireless healthcare support system is presented, which can provide online information about medical status of a patient. The proposed system consists of sensors, adata acquisition unit, smartphone, and the LabVIEW program. The system is able to display,record, and send patient's physiological data.

II. SYSTEM COMPONENTS

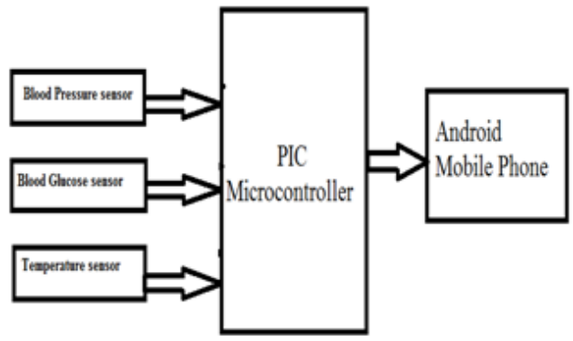

Fig. 1 Health Support System

A. The LM35 Temperature Sensor:

The LM35 series are precision integrated circuit LM35 temperature sensors, whose output voltage is linearly proportional to the temperature in Celsius (Centigrade). The LM35 sensor thus has an advantage over linear temperature sensors, calibrated in °Kelvin.The LM35 sensor does not require any external calibration or trimming to provide typical accuracies of ±¼°C at room temperature and ±¾° Cover a full -55 to +150°C temperature range. The LM35's low output impedance, linear output, and precise inherent calibration make interfacing to readout or control circuitry especially easy. As it draws only 60 µA from its supply, it has very low self-heating, less than 0.1°C in still air.

B. Blood Pressure Sensor:

Blood pressure sensor is a device that measures the pressure of the blood in the arteries as it is pumped around the body by the heart. When our heart beats, it contracts and pushes blood through the arteries to the rest of our body. This force creates pressure on the arteries. Blood pressure is recorded as two numbers—the systolic pressure (as the heart beats) over the diastolic pressure (as the heart relaxes between beats). Some special features of blood pressure sensor includes (i) automatic measurement of systolic, diastolic and pulse, (ii) large LCD screen with LED backlight, and (ii) touch pad key. In addition a typical blood pressure sensor can store 80 measurements data with time and date.

C. Blood Glucose Sensor

Blood glucose sensor is a medical device for determining the approximate concentration of glucose in the blood. A small drop of blood, obtained by pricking the skin with a lancet, is placed on a disposable test strip that the meter reads and uses to calculate the blood glucose level.

D. PIC Microcontroller:

The input is given to microcontroller through these sensor .The PIC microcontroller has inbuilt ADC .Where the conversion takes place and finally output is displayed on smart phone through Bluetooth.

E. Android Mobile Phone:

Mobile is to display the real time output directly on mobile screen. Mobile phone is also used to generate the alarm by android phone to indicate the seriousness of patient body.

III. CONCLUSION

This paper present “Portable health support system” which is easy to use by common man.By using thesystem the healthcare professionals can monitor, diagnose, and advice their patients all the time.

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