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Monitering System for Human Activity

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Abstract
Healthcare costs is increase as age increase. The healthcare system is now transfer into system in which continuous monitoring of patient is possible. Without hospitalization continuous monitoring of patients is possible with help of smart sensing system. There are various system which develop smart system to monitor activities of the human being, such as embedded systems, wireless communication technologies. Smart sensing system based on the wearable sensor monitor all the physiological parameters of the patient along with other symptoms. Sensors detect abnormal situations by monitoring patient. In this we propose smart sensing system more light-weight, high-performance wearable devices will be available for monitoring a wide range of activities of human being.
Keywords: *—Wearable sensors, smart sensors, sensor networks, wireless sensor networks, body sensor networks, body area networks, activity monitoring, assisted living, smart home, physiological parameters monitoring.*

INTRODUCTION

For emergency help panic button is used as wearable sensor. The panic button is mostly comfortable to wear 24/7 so it should be light in weight.

In the medical field, patient's brain activity, body temperature, heart rate, muscle motion are continuous monitor. So with help of wearable sensor it is possible to monitor patient's activity continuously so that wearable sensor is very light sensors that could be worn on the body to perform monitoring of patients. Volume-oscillometric technique for measuring blood pressure using wearable sensor.

Use of Wearable sensor in sport as well as training is increase very day. Few years back it is not possible to measure swat rate without laboratory, but now it is possible with help of wearable sensor

Sometime it is necessary to monitor patients continuously. Such time with help of wearable sensor it is possible to give treatment at home. Diseases like heart attack, Parkinson, sleep apnea require continuous monitor with the help of wearable sensors has made it possible to have the necessary treatment at home. Sometime Patients follow strict routine for recovery such time monitoring with help of wearable sensor. With the help of wearable sensors all physical activities of the patient are possible to be monitored. According to the requirement of individual patient system of sensor is manufacture. All The activity of the patients are monitored by doctors, nurses or caregivers with the help of remote.

To detect falls of elderly within the home smart sensing system is developed. Fall every year increase and it increases to one in two for the age of over eighty years. Due to fall major problems of health may occur. Immediate help needs to be provided for the elderly to reduce the risk of complications. If anyone is not present the elderly may suffer pain, so that medical complication arises, it is dangerous.

Subhas Chandra Mukhopadhyay proposed paper which reviews that Medical alarms help seniors and people with disabilities. Also it help to continue enjoying their independence for longer.

They also provide reassurance for families and friends. [1] the idea there is to have very light sensors that would be worn on the body to perform standard medical monitoring," says Bernie Liebler, a medical device industry trade group based in Washington. "If you can do enough monitoring and collect maximum information, then you would know what's happening with a patient, which would help a physician recommend a course of action," Liebler says. Also he study on wireless sensor technology can also be used to give patients various types of audio and visual feedback. [2] P.A.Shaltis describe a new principle for noninvasive blood pressure measurements. He study with the help of a oscillometric technique. By using multiple parameter mental stress of daily activities is monitor require. Such patients are well suited to having their physiological condition of the patient monitored using different sensor which is low-power.

SYSTEM ARCHITECTURE

Architecture of the human activity monitoring system is very simple. Depending on the task which we have to monitor, different types of sensors are used for smart sensing system. The data from sensors are collected continuously by a processor. The collected data are processed in particular processor and then displayed on a display. Simple wearable sensor are used by normal people to measure the temperature of skin, heart-rate sensor. If the device hasany feature of wireless data transmitting capability, then data can be sent to a central station. The data are processed in the processor and transmitted through a transceiver. Display is either in a graphical format or as a numerical value. The monitoring system may consists of many sensors to measure physiological parameters. Physiological parameters like as body temperature as well as heart-rate etc. The sensing system consists of temperature sensor to measure the temperature of skin, heart-rate sensor as well as accelerometers are used to detect any fall. All the measured value of physiological data are collected by a microcontroller to process. The central controller generate a warning message based on the processed data which help to the caregiver

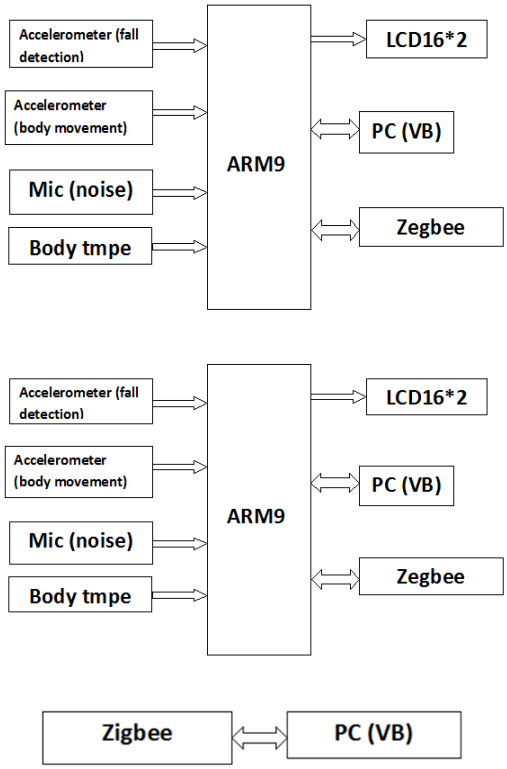

Fig: Proposed block diagram

COMPONENTS USED IN PROPOSED SYSTEM

MICROCONTROLLER UNIT: ARM9:

ARM9 operating at frequencies of up to 125 MHz, Full-speed USB 2.0 OTG, , 768 kB flash memory, external memory interface, three 10-bit ADCs. To optimize system power consumption, Clock Generation Unit (CGU) is present

Liquid crystal display:

LCD is used to see the output of the application. In proposed system 16x2 LCD used which indicates Lcd has 16 columns and 2 rows. Which indicate 16 characters in each line. So, in 16x2 LCD total 32 characters can display.

Accelerometer:

The ADXL335 is 3-axis accelerometer which has low power, thin accelerometer which gives voltage

outputs. Minimum full-scale range ofADXL335 accelerometer is ±3 *g*. ADXL335 accelerometer measure the static acceleration of gravity .it measure dynamic acceleration from motion, shock, or vibration. In ADXL335 accelerometer X_{OUT}, Y_{OUT}, and Z_{OUT} pins is present. in this pins C_X, C_Y, and C_Z capacitors is present with the help of this bandwidth of the accelerometer is measure. Rang of the X and Y axes is of 0.5 Hz to 1600 Hz. rang of Z axis is 0.5 Hz to 550 Hz.

RS 232:

In our project the RS232 has the function to transfer the edited notice (or data) from PC (VB software) to the microcontroller, for the further operation of the system.

Temperature sensor:

To sense the temperature sensor is used. Here we have using LM35 temperature sensor. This temperature sensor can sense the temperature of the atmosphere around it .temperature sensor also sense the temperature of any machine. Output of temperature sensor is voltage is Celsius temperature. Which is converted into voltage linearly proportional with temperature

The LM35 series is available packaged in hermetic TO-46 transistor and it is precision integrated-circuit .it gives output in voltage form is linearly proportional.LM35C, LM35CA, and LM35D are also another available temperature sensor.

RESULT

Date	Time	Type	Temperature	Palm Movement	Head Movement	Noise
25-05-2016	16:34:42		36.0	Abnormal	Abnormal	0000
25-05-2016	16:35:22		36.6	Abnormal	Abnormal	0000
25-05-2016	16:35:41		36.6	Abnormal	Abnormal	0000
25-05-2016	16:35:52		36.6	Abnormal	Abnormal	0000
25-05-2016	16:36:11		36.6	Abnormal	Abnormal	0000
25-05-2016	16:36:22		36.6	Normal	Abnormal	0000
25-05-2016	16:36:41		36.6	Normal	Normal	0000

Date	Time	Type	Temperature	Palm Movement	Head Movement	Noise
25-05-2016	16:34:56		37.9	Abnormal	Abnormal	0000
25-05-2016	16:35:11		37.3	Abnormal	Abnormal	0000
25-05-2016	16:35:22		00.0	Abnormal	Abnormal	0000
25-05-2016	16:35:26		36.6	Abnormal	Abnormal	0000
25-05-2016	16:35:41		37.9	Abnormal	Abnormal	0000
25-05-2016	16:35:56		37.3	Abnormal	Normal	0000
25-05-2016	16:36:07		36.6	Normal	Normal	0000
25-05-2016	16:36:37		34.8	Normal	Normal	0000

ADVANTAGE

Less time delays
Quick response time
Fully automate system
Robust system
Low power requirement

APPLICATION

Medical
Entertainment
Security
Commercial fields

CONCLUSION

A wearable wireless sensor network human activity recognition system is introduced in this paper and we can also integrated it with social network it to improve usability. Android mobile phone is applied as base station.In our existing system in future for monitoring a wide range of activities more light-weight, high-performance wearable devices will be available. The challenges faced by the current design will also be addressed in future devices. The development of lightin weight physiological sensors will lead to more comfortable wearable devices to monitor different ranges of activities.

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