

MOVABLE PATIENT ADVANCED HEALTH MONITORING USING GPS

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Abstract - The Heartbeat Malfunction detector is a device which monitors the heartbeat and body temperature of a movable patient via a heartbeat Sensor, temperature Sensor and compares it against a predetermined value set and if these values cross a particular limit it would automatically alert the doctor of the patient via a sms from a Bluetooth enabled mobile, using Bluetooth Wireless Technology. A heartbeat sensor is directly connected to a microcontroller, which measures the Beat per Minute (BPM). This heart beat sensor is designed to give digital output of heart beat when a finger is placed inside it. With each heart pulse the detector signal varies. This variation is converted to electrical pulse. This signal is amplified and triggered through an amplifier which outputs +5V logic level signal. The digital pulses are fed to the external interrupt of microcontroller 8051. By using a software counter in the code, we can count the pulses. The microcontroller (8051) is here used to develop a heart beat monitoring system. By placing your finger in between a LED and photo resistance, we can detect the pulses of heart. A temperature sensor is used to check the body temperature of patient.

Key words :Blue tooth,j2me,GPS,Sensors.

I INTRODUCTION

1 Now-a-days many people are looking forward to have a healthy life. These days due to pollutions and highly competitive aspects in field of living, number of people falling pray for heart related diseases are seen often arises due to increase of stress level. These days maintaining a healthy life is tough. It is vital to keep track on body by regular check-up. Patient monitoring refers to the continuous observation of repeating events of physiologic function to guide therapy or to monitor the effectiveness of interventions and is used primarily in the intensive care unit and operating room.



Fig.1. Drawbacks of Existing System

Existing System- Currently the system used for patient monitoring is the fixed monitoring system which can be used only when the patient is on bed. The available systems are huge in size and only available in the hospitals in ICU.

In existing system patient need to hospitalise. Regular monitoring of patient is not possible once he/she is discharged from hospitals. These systems cannot be used at individual level.

II. PROPOSED SYSTEM

The system which we propose to develop would not only help in monitoring the patient when he is in the bed but also when he is out of his bed i.e. when he is mobile. Such a system would constantly monitor important body parameters like temperature , heartbeat and would compare it against a predetermined value set and if these values cross a particular limit it would automatically alert the doctor and relatives of the patient via a SMS. In such case the patient will get a very quick medical help and also would save time and energy of the relatives who neither would have to be with them all the time. Also by using GPS technology the exact location of the patient can be determined. The followings are the various Programming Languages & Technologies that are going to be used in the proposed system

The system will be divided into the following sub modules or sections.

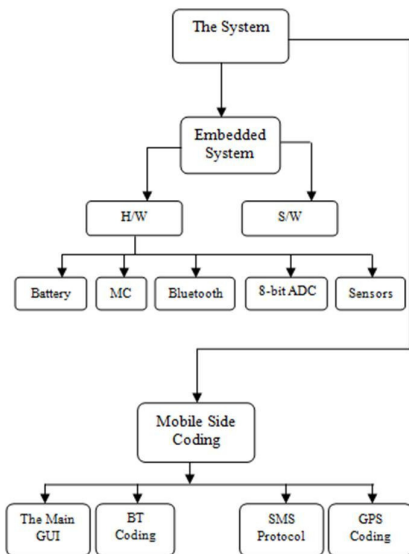


Fig.2. Block Diagram

Power Supply

This unit will supply the various voltage requirements of each unit.

Microcontroller

This unit is the heart of the complete system. It is actually responsible for all the process being executed. It will monitor & control all the peripheral devices or components connected in the system. In short we can say that the complete intelligence of the project resides in the software code embedded in the Microcontroller.

The controller here user will be of 8051 family. The code will be written in Embedded C and will

The flowchart shown explains the complete working of model of Heartbeat Detector. Each block present explains the step-wise procedure to implements for tracking heartbeat count rate. By placing your finger in between a LED and photo resistance, we can detect the count of heartbeat. These are heartbeat sensors use to count heartbeat of patient. The abnormalities can be if the value of heartbeat count is less than or greater than 140-152 beats per minute. The alert is send in form of message containing higher and lower level of heartbeat count along with the patients present heartbeat count. This alert

be burned or programmed into the code memory using a programmer. This unit requires +5VDC for it proper operation.

LCD 16x2

We are going to use 16x2 character LCD. This will be connected to microcontroller.

555 Timer

Here we are using it in astable Multivibrator mode for generating clock pulses. The frequency depends upon the external register connected to the IC. This unit requires +5VDC for it proper operation.

Bluetooth Modem

Bluetooth Modem is a device that acts as mediator between any embedded system and the Bluetooth communication medium. It has built-in protocol for serial communication i.e. Serial Port Profile. Thus it provides an ideal solution for developers who want to integrate Bluetooth wireless Technology into their design with limited knowledge of Bluetooth and RF technologies. This unit requires +3.3VDC for it proper operation. This unit requires +5VDC for its proper Java APIs for Bluetooth Wireless Technology.

III.GENERAL STRUCTURE OF AN EMBEDDED SYSTEM

The main function of an embedded system is to take the input from typical sensors especially analog and process on it for decision-making. Finally the response is transferred to the external world with the help of actuators for controlling purpose. Thus, an embedded system should have minimum system configuration consisting of CPU, instruction memory (code memory), Data memory and human interface unit.

message is send (SMS) via Bluetooth wireless technology.

IV.SOFTWARE IMPLEMENTATION

offers significant technical information; terms such as location, velocity, and estimated-time-of-arrival (ETA) to a specific location represent commonly encountered technical points when discussing GPS. While technology for its own sake can make headlines and even move major markets for a spell without marketable products and viable applications, even the best technologies and "blue-sky" optimism

wane before long. There are a multitude of PDA offerings in the marketplace today. Some have features that rival low-end laptops, but the majority of PDAs and cell phones are still resource-limited, and the expectation is that this trend will continue for some time. Until power consumption and price-point challenges are overcome to allow high-resolution graphics, memory capacity, and affordability, GPS developers must hit the market where it currently exists.

J2ME

The Java 2 Platform, Micro Edition (J2ME) and Bluetooth technology are two of the most exciting offerings in the wireless industry today. J2ME, most compact of the three Java platforms, is inherently portable because it shares the Java "write once run anywhere" philosophy and thus enhances developer productivity. Bluetooth is a short-range universal wireless connectivity standard for electronic appliances and mobile devices. Sun provides products for both the CDC and the CLDC configurations, including environments for PDAs such as Palm OS and WinCE.

From a GPS perspective, the MID Profile does not support serial communications but does mandate HTTP connectivity. As such, the J2ME offering is a viable alternative for the first sample application, which relies solely on HTTP for retrieving relevant GPS data. The Java2 Micro Edition platform joins the Bluetooth technology to be one of the most exciting offerings in the wireless industry. J2ME was defined by Sun Microsystems to meet the new needs of Java developers working on consumer and small embedded systems. J2ME itself is not a

specification, but a group of them defining how Java technology is upon devices with few resources compared to a PC. This platform is portable, so applications follow the Java philosophy "once written run anywhere". It appears as a tool to let us write custom applications and run them on mobile Bluetooth enabled devices. Devices using this Java Platform are: PDAs, cell phones, television set top boxes, remote telemetry unit and other embedded devices. These are heterogeneous devices regarding processor power, memory, persistent storage and user interface. It is difficult to provide an optimal functionality for all these embedded devices due to this heterogeneity. There was a first division of the devices into two sections considering the resources above mentioned, but not taking into account the function or use of the device. A profile is a set of JAVA APIs for a particular class of device, considering its function, such as mobile phones. It is built over the platform provided by the correspondent configuration. It is meant to couple this configuration. The Foundation Profile and the Mobile Information Device Profile (MIDP), correspond to CDC and CDLC respectively. For example, MIDP 2.0 joins CLDC to provide a runtime environment. J2ME defines a small core API to be implemented in every J2ME compatible device, deployed in different configurations. These are heterogeneous devices regarding processor power, memory, persistent storage and user interface. It is difficult to provide an optimal functionality for all these embedded devices due to this heterogeneity. There was a first division of the devices into two sections considering the resources above mentioned, but not taking into account the function or use of the device.

IV.CONCLUSION

By the realization of the above proposed system one can learn many aspects of a digital electronics circuit. This will give the complete knowledge of designing microcontroller based system and developing embedded software. Statistics reveal that every minute a human is losing his/her life across the globe. More close in India , everyday many lives are affected by heart attacks and more importantly because the patients did not get timely and proper help . There are many emergency response services striving hard to save the lives of people during emergencies, though they are successful at few times. But sometimes they fail to race against time to reach the victim. All over the globe, emergency response service is the need of the hour.

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