

## **Microcontroller-based Wireless Heart Rate Telemonitor for Home Care**

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**Abstract:** - *Homecare is the provision of health care services to patients in their own home. One of the main purposes of homecare telemedicine is to develop a wireless, low-cost and use-friendly system which allows patients to measure their own vital signs, such as heart rate and temperature, and provide the health care professionals with the facility to remotely monitor the patient's vital signs quickly and easily. The gadget would then activate a GSM modem (SIM based) and also a GPS (global positioning system). The gadget would then take out the location reading from the GPS. Other vital information such as Heart Rate and temperature is taken and sent to predefined numbers. The receiver will get an SMS which will contain information of the senior person with his/her position co-ordinates and his/her current status (Heart Rate). An onscreen display will start scrolling the person's name, address and contact details so that people who try to help such a person get the complete information from the device.*

**Keywords** - *PIC Microcontroller, LM35, GPS, GSM, Heart Rate sensor.*

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### **1. INTRODUCTION**

Today, the medical field is faced with growing public concerns and government demands for reform. The outrage is directed at the high costs of quality health care and the inability of healthcare specialists to provide adequate medical services to rural populations. The availability of prompt and expert medical care can meaningfully improve health-care services at understaffed rural and remote areas [1-3]. In distant regions of the country the degree of development of healthcare providing services has not reached the appropriate level to adequately address the health care needs of the populations in these areas. A mobile monitoring system utilizing Short Message Service with low-cost hardware equipment has been developed and implemented to enable transmission of the temperature and Heart Rate signal of a patient [10]. At the consultation unit, dedicated application software is required to manage the follow of SMS messages from the Mobile and display the temperature and Heart Rate of the patient. The special of this device is it is not only measure Heart Rate and temperature measurement, but also will display the measured Heart Rate in beat per minute. The device consists of electronic circuit system, embedded system which is microcontroller program. The Heart Rate monitoring systems consists infrared LED, photo transistor as a sensing device for the Heart Rate system. Conventional telemedicine systems using Public Switched Telephone Network (PSTN) land lines are already available to enable a doctor to monitor a patient remotely for home care or emergency applications [5], [6]. Also, the mobile phone has been recognized as a possible tool for telemedicine since it became commercially available. This system which allows patients to measure their own vital signs, such as Heart Rate, temperature and provide the health care professionals with the facility to remotely monitor the patient's vital signs quickly and easily, vital signs can be transmitted from an ambulance to a hospital in a store-and forward mode [7], [8], or in real-time mode [9].

A PIC16C774A microcontroller was then interfaced to the wearable Heart Rate signal to collect the data from these devices, process them, store them and feed them to a transmitter. A high performance RF Module Tri-Band GSM/GPRS 900/ 1800/ 1900 MHz transmitter and receiver were then used to Wirelessly transmit and receive the vital signs data from the micro-controller to the consultation unit, dedicated application is required to manage the follow of SMS messages from the Mobile and display the temperature, location and Heart Rate of the patient”.

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