**E-health monitoring system for the aged**

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Abstract:

The normal functioning of a person's health is determined mainly from the measurement of the individual's body temperature and heart rate. In the past, only hospitals had health monitors, which was a huge and fixed monitoring device that was used to know the health status of bedridden patients. These monitoring devices which were only available in the hospitals were constantly on the patient's body. Many of them are not user friendly and it is important that the patient have a portable device that can always be used to measure these parameters when no one is around. The system monitors the heart beat and temperature of a patient simultaneously with the pulse sensor and the temperature sensor by populating a centralized database with its readings at defined intervals. When the readings are abnormal, or have risen beyond preset threshold, the device makes use of the GSM/GPRS/GPS shield to send the readings and location coordinates to the patient's doctor/guardian to quickly track and examine/diagnose the patient's condition and take early precaution to save the patient's life. It is important that these parameters be measured and monitored frequently for the aged or the elderly to reduce the risk of falling ill and possibly dying. The system is setup to constantly measure these parameters and reduce mortality rate for the elderly.

I. Introduction

Heart rate is the most important parameter of the cardiovascular system as it helps in assessing its condition. It is the number of heartbeats per unit time and is expressed as beats per minute (bpm). The heart rate of a healthy adult at rest ranges from 70-75 bpm for both male and female adults. The heart rate ris es steadily amid activities and returns gradually to a stable value after activity [1]. Temperature on the other hand is the ability of a body to generate and get rid of heat. The normal human body temperature is 37.0 °C [98.6 ° F]. Normal human body temperature depends on the time, place in the body, from which the measurement is made, and level of activity of the person [2]. The trend of cardiovascular disease has shown that heart beat rate is a determining factor for the possibility of a heart attack while an increase in the body temperature can induce fever on a patient [3]. There are various instruments available in the hospitals to keep track of the internal body changes, but many of them have limitations regarding to maintenance, cost, size of instruments, and mobility. While the ways in which heart rate could be measured from the human body has been well established in cardiovascular studies, pulse rate measurement from fmgertip and the neck has proven to be efficient [4].