A Wireless Pulse-Based Health Monitor for Elderly

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1. Introduction

Nowadays, people are more concerned about the elderly health issues. Engineers are therefore developing many healthcare systems to serve the community. With today’s development in technology, one’s health state can be analyzed by some vital signals (such as heart beat rate) from our human body.

This project contains the emergency alarming service. In addition, the elderly health state can be continuously monitored by obtaining their heart beat rate. The data will be then sent to physician offices via telephone network. Thus, a suitable treatment can be provided for the elderly.

2. Objective

The aim of this project is to develop and implement a wireless pulse-based health monitor system, which contains heart rate counting circuit, a wireless communication system, a telephone line transmission system and a PC graphical interface for monitoring.

System Specifications:

- Measure heart beat rate by Infrared method
- Wireless transmission of heart beat data
- Provide emergency link service
- Real time and remote monitoring via telephone network
- User friendly Graphical interface

![Diagram of system components]
3. System Flow Chart

Below the picture shows the detail system flow chart. The three main areas Client, Server and the Remote server, link together and implement real time monitoring.

**Client**
- Search the Client
- Measure the heart rate
- Transmit the heart rate reading

**Server**
- Search the Server
- Receive heart rate reading
- Dial the remote Server

**Remote Server**
- Detect Ringing
- Receive DTMF signal by telephone receiver circuit
- Obtain heart rate reading or emergency link signal by microcontroller
- Send Data to computer through RS232 interface
- Hook off the telephone line

**By RF**

**By Telephone Network**

**Emergency link pressed**
- Interrupt the microcontroller
4. Result

The following photos show the prototypes of our client, server and remote server respectively:

Client                              Server                              Remote server

The following two pictures show the state of the measurement processes:

This LCD shows the heart rate of the patient

This LCD reveals the result has send

The following graph shows the heart bit rate of a person in different time and the data can be saved as excel format. The result can act as a reference for a patient to take a record.

Heart Beat rate display on computer

Heart Beat rate save in Excel Format