SMART HOME WIRELESS FACILITIES IN NEXT GENERATION HEALTH CARE

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Abstract*—This project concerns with the analysis of bio- medical characteristic in human body and healthcare facilities monitoring. It also provides the environmental application security monitoring based analysis health condition. Sensors are used to sense the heart rate, pressure temperature, etc., and it using the arduino uno controller technique method to transmit the signal by use of GSM module. It also paves a way to transfer the data to the particular doctor or hospital with use of GSM module. This system continuously monitors the data and during some critical condition, the doctor will send the prescription and in case of emergency, the doctor will send the ambulance.*

***Keywords*—Arduino uno controller, GSM- Global System for Mobile Communication, RS 232, Relay**

1. INTRODUCTION

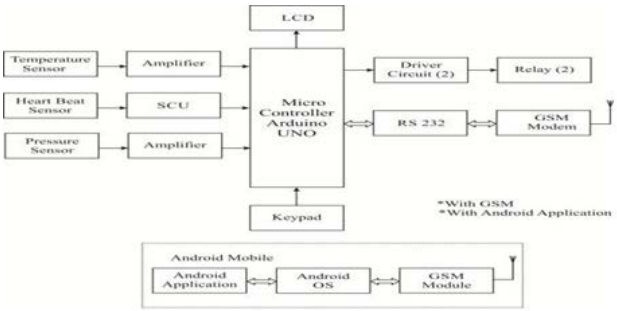
In this project health care monitoring system based on Patients Body parameters such as temperature, pulse rate, and heart rate etc. This system monitoring by using of pc. By this method create some high noise in router based monitoring pc system, and it has high power using digital device and also cost high. The objective of the project is to endow biomedical monitoring with the help of PIC and wireless technology. Embedded technology is used for a biomedical application. This project is designed with following blocks, temperature sensor; pressure sensor; heart beat sensor; amplifier; PIC; GSM; RS232 and android app. We can get the patient‘s temperature and the pressure values with the help of temperature and pressure sensors. These outputs are given to the PIC microcontroller via amplifier. Patient‘s heartbeat and the respiration values are also measured with the help of temperature and heartbeat sensors. PIC collects all these data‘s and are transmitted to the mobile via GSM transmitter. GSM receiver receives this value and gives to the mobile.

2. BLOCK DIAGRAM

Once the signal is properly amplified then it is further processed using Atmega 328p of core processor and then the signal is transmitted with help of GSM module SIM900A and TCP protocol. Remote controlling of the devices extends numerous advantages to senior citizens and people with disabilities which helps them in being more autonomous and increases the standard of living.

Environment observation and device management allows new level of comfort in homes and it can also manage the energy consumption efficiently which in turns promotes the energy saving. Researchers have worked on home automation and environmental monitoring system wherein the cost is high, size is troublesome.

The projected system is price effective and controlled by user friendly embedded systems. In this projected system, we have designed one master module, which consists of microcontroller. This received data are processed by Atmega 328p and controlled by command unit and finally we get the processed data on LCD.



3. HARDWARE REQUIREMENTS

A. ARDUINO UNO CONTROLLER

Arduino / Genuino Uno is a microcontroller board based on the Atmega328p. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal.LCD DISPPLAY

A liquid crystal display (LCD) is a thin, flat electronic visual display that uses the light modulating properties of liquid crystals (LCs).

B. HEART BEAT SENSOR

A device is disclosed wherein a single sheet of resilient material is formed into a base portion for holding the heartbeat sensor and three resilient bands that extend upward. Thus both embodiments result in more pressure being applied to the sensor at the portion of the user's fingertip closest to the end.

C. PRESSURE SENSOR

A pressure sensor measures in terms of force per unit area. A pressure sensor usually acts as a transducer; it generates a signal as a function of the pressure imposed.

D. TEMPERATURE SENSOR

A thermistor is a type of resistor whose resistance varies with temperature. Thermistors are widely used as

inrush current limiters, temperature sensors, self-resetting overcurrent protectors, and self-regulating heating elements.

E. SIGNAL CONDITIONING CIRCUIT

The signal conditioning unit accepts input signals from the analog sensors and gives a conditioned output of 0-5V DC corresponding to the entire range of each parameter. This unit also accepts the digital sensor inputs and gives outputs in 10 bit binary with a positive logic level of +5V. The calibration voltages (0, 2.5 and 5V) and the health bits are also generated in this unit.

F. RS232

In telecommunications, RS-232 is a standard for serial binary data interconnection between a DTE (Data terminal equipment) and a DCE (Data Circuit-terminating Equipment). It is commonly used in computer serial ports

G. GSM (Global System for Mobile Communications

GSM is a cellular network, which means that mobile phones connected to it, searching for cells in the immediate vicinity. There are five different cell sizes in a GSM network— macro, micro, pico, femto and umbrella cells. The coverage area of each cell varies according to the implementation environment.

H. Subscriber Identity Module (SIM)

One of the key features of GSM is the Subscriber Identity Module, commonly known as a SIM card. The SIM is a detachable smart card containing the user's subscription information and phone book. This allows the user to retain his or her information after switching handsets.

I. AMPLIFIER

An ELECTRONIC AMPLIFIER is a device for increasing the power of a signal. It is done by taking energy from a power supply and controlling the output to match the input signal shape but with a larger amplitude. An amplifier may be considered as modulating the output of the power supply. Inverting amplifier is used as a gain amplifier. The gain can be changed by adjusting the value of feedback resistance value.

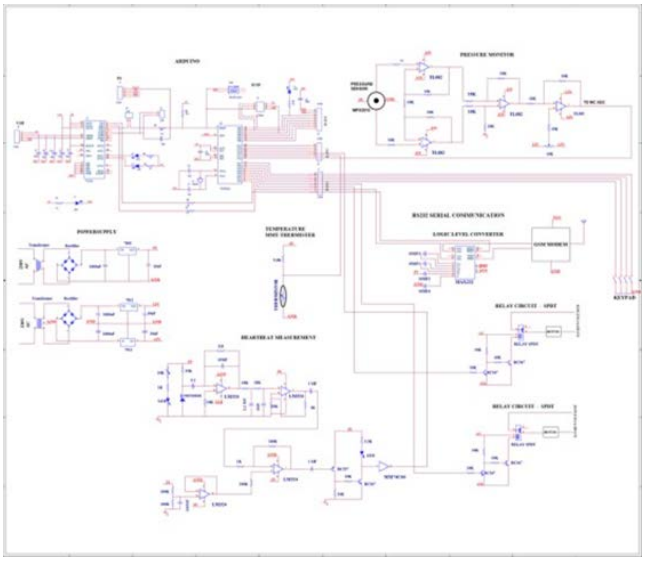
J. DRIVER CIRCUIT

A transistor is a semiconductor device used to amplify and switch electronic signals. It is made of a solid piece of semiconductor material, with at least three terminals for connection to an external circuit. A voltage or current applied to one pair of the transistor's terminals changes the current flowing through another pair of terminals.

K. RELAY

A relay is an electrically operated switch. Current flowing through the coil of the relay creates a magnetic field which attracts a lever and changes the switch contacts. The coil current can be on or off so relays have two switch positions and they are double throw (changeover) switches. Relays allow one circuit to switch a second circuit which can be completely separate from the first.

4. CIRCUIT DIAGRAM



5. RESULT

The doctor will forward the continuously monitored report regarding the patient‘s development in the health condition. For differently abled people, it provides a way for the regular monitoring of their health condition remotely. There are possibility for improving the standard of living of the people who are physically challenged and mentally retarded.

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