Health Monitoring System using Wireless Sensors for Co-Morbid Patients

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***Abstract*— The proposed paper focuses on Patients are suffering from physical and mental illness called co-morbidities. The treatments for co-morbid patients need to be given while patients might be at home or in hospital. The patient needs to be monitored by caregivers/caretakers. Caregivers/caretakers cannot predict the exact change of the optimal result due to variation in body of the co-morbid patient for which, need of sensors is required to monitor the patient activities without manual support. Sensors such as eye blink sensor, motion sensor and temperature sensor are used to check the level of patient and the same will be displayed in LCD for monitoring. If some abnormalities occur than a alarm by using buzzer will alert the caregiver/caretaker, doctor or family member for taking necessary actions. A ZigBee module stores the patient details in the hospital management & is useful to check the patient report with secure level in the database.**

Keywords*— *Motion Sensors, ZigBee, LCD, Buzzer, Eye Blink Sensor, Temperature Sensor

I. INTRODUCTION

Patients are suffering from various kind of diseases & Due to high cost of medical treatment & long term admitted treatment required patients are often treated at home especially co-morbid patients. Present approach allows us to monitor the patient continuously through the sensors without the manual support (caretakers). In this system, Information and Communication Technologies play a vital role to increase the safety and efficiency to enable the patient monitoring. While monitoring, the data can be updated on the PC & further the data can be send to the monitoring section of the respective hospital. The collections of different data about the patient's details are stored in secure way. Modern communication system plays a vital role & provides technological support to the medical field.

II. LITERATURE SURVEY

This paper has been proposed about the home based health monitoring system using android Smartphone. The main aim is monitoring the patient in easier way. By using biosensor to continuously takes the temperature, Pulse Rate and ECG of the patient. It also gives feedback to doctor and patient through their mobile device using android application. The data can also be displayed on personal data and to reduce the health care cost [7].

This paper has been proposed about the method of performance monitoring and control by wireless body sensor network. We have to monitor the patient with the help of this sensor and transmitting the health care related data whether the information is correct or not. We have used a performance meter to measure the performance and to check the similarities with real time measurement data [8].

This paper has been proposed for patients suffering from coma who are not treated at home, there are many illnesses so the health care process is reduce. A supervision action can be carried out within hospital, but missing at home. For monitoring the patient such that blood pressure, pulse rate, temperature, blood glucose, oxygen saturation, electrocardiogram by using mobile bio sensor and store the result in PHR. Best practice is not in home treatment. Most practice guideline is intended for clinical treatments are not easily mapped to home treatment [6].

This paper has been proposed to discuss the Mobile health wireless mobile technologies used to improve the chronic patient healthcare. Mobile health also called M-health technology. The mobile health technologies are making the patient health more affordable, accessible and available. Nowadays the key stakeholders have launched several health applications that are proliferating and targeted wide range of services. One of the services is GSMA tracker. The GSMA will always track about the patient condition and intimate to the doctor. The aim of our paper is to period guidance for mobile based health solution and to help the technicians to promote the services by implementing the insights [1].

III. ARCHITECTURE OF THE PROPOSED SYSTEM

In this system, we can monitor the Coma patient using PIC microcontroller which is shown in Fig. 1. The eye blink and motion sensor are used to monitor the eye blink and movement of the Coma patient and intimate to monitor section using Zigbee. The data are displayed in the LCD and if any abnormalities occur, then alert signal is given by the Alarm. Another Zigbee interfaced in the server section is connected with a PC. The data received is decrypted and the database is updated in hospital home page. Here the password generation is applied for secured database management system. So the authorized persons only can access the database for particular patient's reference.

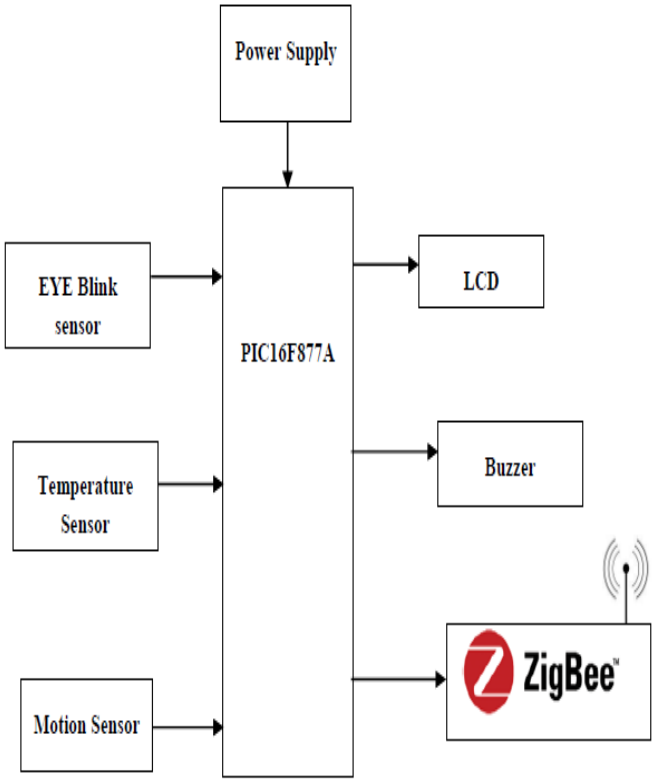

Fig.1. Microcontroller Interfacing

IV. TYPES OF SENSOR

Types of sensors used are motion sensor, temperature sensor, eye blink sensor.

a) MOTION SENSOR:

Motion detector detects moving objects, particularly people. A motion detector can be integrated as a component of a system which automatically performs task/alerts a user of motion in an area. Motion detectors play a important role for various applications such as security, home control, energy efficiency, automated lighting control, and other useful systems.

b) TEMPERATURE SENSOR:

Temperature is the most often-measured environmental quantity. Temperature is one of the most commonly measured variables and therefore there are various ways of sensing temperature. Temperature sensing shall be done either through direct contact with the heat source, or remotely, without direct contact with the source of heat using radiated energy instead.

c) EYE BLINK SENSOR:

In Eye Blink Sensor, the sensing element detects the optical muscles movement continuously and amplified to give pulse output. The elastic strap holds the sensing element in place of vision muscle movement. The active element in formed by two metallic electrodes A and B are placed in a feedback loop of high frequency oscillator. When no target in present the sensor capacitances are low therefore the oscillator amplitude is small. When we target a face of the sensor it increases the capacitances. This increase in capacitance results in an increased amplitude of oscillator.

d) BUZZER:

A buzzer is an audio signaling device, which shall be mechanical, Electromechanical, or piezoelectric. Typical uses of buzzers include alarm devices, Timers and confirmation of user input such as a click of mouse or a keystroke. The piezoelectric element may be driven by an oscillating electronic circuit or by other audio signaling source, driven with a piezoelectric audio amplifier. Sounds commonly used to indicate that a button has been pressed maybe a click, a ring or a beep.

e) LIQUID CRYSTAL DISPLAY:

The liquid crystal display (LCD) is an electronic visual display, flat panel display or video display which uses the modulating properties of light in the form of liquid crystals. Liquid Crystals do not directly emit lights. It is used to display the results of the operation such as sensed values, motor status etc…

f) ZIGBEE:

ZigBee is a specification for high-level communication protocols. The technology & specifications defined for ZigBee is simpler and less expensive compared to other wireless personal area networks (WPANs), like Wireless Fidelity or Bluetooth. Its low power consumption limits the transmission distance to 10 to 100 meters line of sight, depending on output power and environmental condition.

V. CONCLUSION

The proposed system in the paper is designed for co-morbid patients using three types of sensors. If any changes occur in the body it can monitor, without manual support. While monitoring, the values will be displayed in LCD & in case of any major/sudden change in the result shall generate the alert signal by enabling the alarm. The values are stored in ZigBee and transmit to the PC.

VI. REFERENCES

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