

Design and Implementation of Patient Healthcare System

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ABSTRACT

Patient healthcare provision in the home environment presents many challenges. Patient Healthcare is a term used for the practice of medicine and public health supported by mobile devices. It is most commonly used in the reference to using mobile communication devices such as mobile phones, tablet & computer PDAs. A wireless sensor network with a large number of sensor nodes can be used as an effective tool for gathering data in healthcare situations. It is an autonomous sensor to monitor the physical or environmental condition. This project addresses Patient Healthcare System at home. The purpose of this project is to on emergency case doctor can handle the situation using this device. After analyzing these patient records from device then doctor send the all details via SMS to the patient like prescription, tablets etc., and patient take action on this update and take a relax.

Keywords: Predictive monitoring, Wearable sensors, Personalized monitoring.

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I. INTRODUCTION

The current health care systems were structure and optimize for the reacting to crisis and managing illness are facing new health problems, for e.g. a rapidly growing population of elderly and rising the health care spending. The statistical graph represents to suggest that health care needs a major shift toward more scalability and more affordability solution. The structured of health care systems toward proactive managing of wellness and focusing on to prevent the early detection of diseases. The wearable systems were continuous health monitoring as a technology in helping the transition information to the healthcare. Wearable health monitoring systems allow an individual to monitor the changes in human vital sign and provide to help maintain the health status.

The majority of the patients in the hospital are ambulatory and they are well suited to be monitored using wearable sensors for the purpose of predictive care. The goal of such system is to provide early warning of physiological corrupt Such that preventative clinical action may be taken to improve patients outcome Health is one of

the global challenges for humanity. World health organization (WHO) has mentioned that for an individual proper health is the fundamental right. The people who are healthy secure their income as they don't need to spend more for medicines and in hospitals. They reduce burden on over populated clinics, hospitals and reduce workload of medical professionals. So to keep people fit and healthy proper healthcare services should be provided.

Despite wearable patients' monitors now being manufacture allowing the collection of physiologically data from ambulatory patients the resulting quantity of data acquired each day is large the data deluge effect occurs. The workload of clinicians and healthcare workers prevents then inspecting long time series of multivariate patients physiological data to high degree accuracy and the predictive accept to patients monitoring is lost. Intelligent online processing of this large datasets is required for predictive monitoring the results of which should then focus the limited resources of human experts to these to those subsets of patients who are deemed to be most at risk of being physiologically unstable and who are in need of expert review.

II. PROPOSED SYSTEM

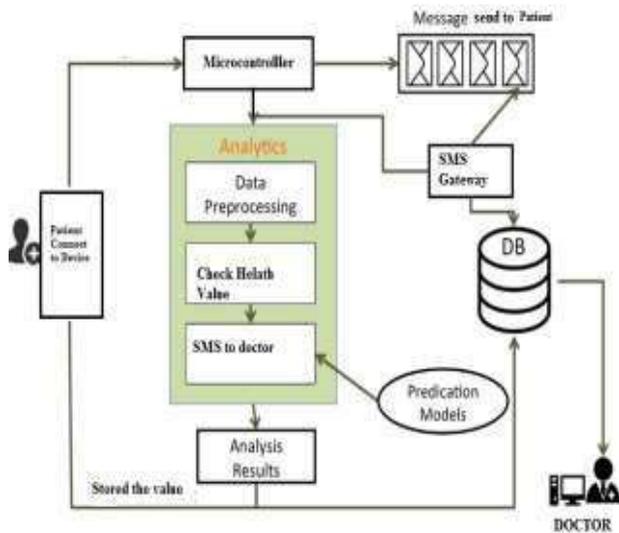


Fig 1. System architecture

System Flow:

Various sensors are placed on human’s body to collect the real time data about his health.

This collected data are then compared with the threshold data to check the abnormality of the patient.

Database of the patients are continuously updated in doctor’s PC. Whenever abnormal condition is detected, an alarm is also sent to the doctor’s mobile from of a SMS alert, through SMS Gateway.

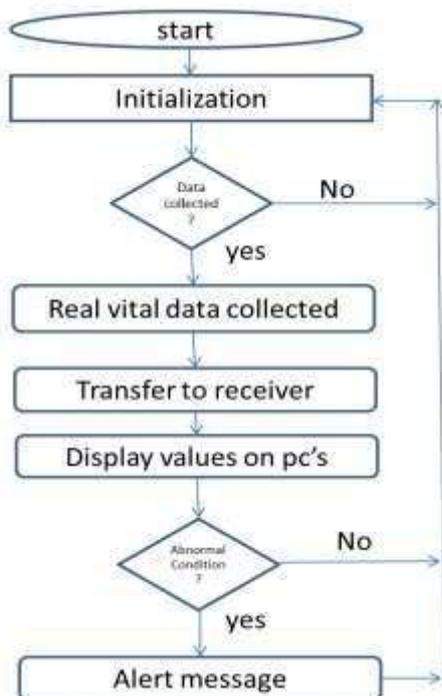


Fig.2 Flowchart of system

Normal range for various parameters:

The body temperature lies in the range 36.5 degrees 0C to 37.2 degrees 0C for a healthy person.

The heart rate of a normal adult ranges from 60 to 100 beats per minute.

III. METHODOLOGY

3.1 Hardware

Microcontroller: The blocks in the diagram represent the major components of the system and interconnection between hardware and software.



Fig 3. Microcontroller

LM335 sensor is used for temperature measurement, whose output voltage is linearly proportional to the Celsius (centigrade) temperature.



Fig 4. Temperature sensor

IV. MATHEMATICAL MODEL

System Description:

Input:

- Function Health Calculation ()
- P : Patient.
- M : Microcontroller.
- S: Sensors
- D : Doctor.
- V : Value of Patient health.

Output:

When Patient connect to the device then automatically calculated patient health.

Input

- Function SMS (id, request, data)
- ID : unique id for each patient.

Request : Doctor send request to patient.

Data : Doctor input text data.

Output: Doctor send SMS in case of patient emergency.

Success Conditions: Success system when Correct value send health value to the doctor

Failure Conditions: Our system fails when no any result found to the given input.

V. RESULT

S. NO	Temperature	Heartbeat	Status
1	30	100	Normal
2	50	40	Abnormal
3	50	140	Abnormal

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VII. CONCLUSION

The proposed system is more efficient and beneficial. It uses low cost, lightweight sensor which monitors the patient continuously and proper messages are provided in emergency. Thus it saves life of patient when abnormal conditions take place. A dynamic integration related to multimedia medical data provides the framework which is low overhead and rich multimedia support. The wireless medium develops a wireless emergency healthcare system for an environment that integrates with several technologies such as Microcontroller, Sensors and SMS.

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