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Patient Health Monitoring System Using IOT

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ABSTRACT: Health has prime importance in our day-to-day life. Sound health is necessary to do the daily work properly. This project aims at developing a system which gives body temperature and heart rate using LM35 and pulse sensor respectively. These sensors are interfaced with controller Arduino uno board. Wireless data transmission done by Arduino through wifi module.ESP8266 is used for wireless data transmission on IoT platform i.e. thing speak. Data visualization is done on Thing speak. So that record of data can be stored over period of time .This data stored on web server so that it can see to who logged.

KEYWORDS: Health monitoring system, controller, pulse sensor, temperature sensor, IOT

I. INTRODUCTION

In the recent years wireless technology has increasing for the need of upholding various sectors .In these recent years IoT graped the most of industrial area specially automation and control. Biomedical is one of recent trend to provide better health care. Not only in hospitals but also the personal health caring facilities are opened by the IoT technology. So having a smart system various parameters are observed that consumes power, cost and increase efficiency .In according to this smart system, this paper is reviewed.

In traditional method, doctors play an important role in health checkup. For this process requires a lot of time for registration, appointment and then checkup. Also reports are generated later. Due to this lengthy process working people tend to ignore the checkups or postpone it. This modern approach reduces time consumption in the process.

In the recent years use of wireless technology is increasing for the need of upholding various sectors .In these recent years IoT groped the most of industrial area specially automation and control. Biomedical is one of recent trends to provide better health care. Not only in hospitals but also the personal health care facilities are opened by the IoT technology. So having a smart system, various parameters are observed that consume power, cost and increase efficiency.

In accordance with this smart system, this paper is reviewed. Medical scientists are trying in the field of innovation and research since many decades to get better health services and happiness in human lives. Their contribution in medical area is very important to us and cannot be neglected. Today's automotive structures have the root ideas coming from yesterday's basics.

Also Early detection of chronic diseases can be easy with this technology. The body temperature, heart rate, blood pressure, respiration rate are prime parameters to diagnose the disease. This project gives temperature and heart rate values using IoT.

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II. LITURATURE SURVEY

Internet of Things (IoT) and cloud computing plays a vital role in today's Tele-monitoring health system. This system keeps track of patient's physiological parameters through collection of body sensors' data using Raspberry Pi board. The patient's health card are developed by the doctors and displayed on a webpage where doctors and patients can access and communicate each other without physical presence. Using cloud computing, the data can be stored, updated and accessed from anywhere in the world. It is very suitable for rural areas where medical facilities are not available.

In Remote health monitoring system using IoT, Body wireless sensor Network (BWSN) is used to transmit the patients' health parameters collected through Raspberry Pi microcontroller to the physicians and caretaker wirelessly. Being long range wireless technology, emergency situation of the patient's health is quickly detected and timely intervention leads to save the life of the patient.

Owing to costlier healthcare and long waiting time in hospitals, the concept of in-home patient monitoring system have been emerging in the recent years. This system collects data of various body parameters through Biosensors, wearable devices and smart textiles and it transmits the data to central node server securely through Cipher text Policy Attribute Based Encryption (CP-ABE) method. In turn, the server shares the collected data to the hospitals for further treatment. The server rings alarm to the ambulance during emergency situation. It is very beneficial for elders and chronic patients who require continuous monitoring.

The specialized healthcare monitoring system for elderly people is a growing need in the aging population world. This system performs basic health checkups by measuring the body parameters regularly and report the data to the doctors. The result data are then displayed as statements in a web application where doctors and patients can interact with each other. Evaluation is of two parts: 1) Qualitative interviewing and 2) Quantitative Survey. The main challenge is to make elders equipped with for growing new technologies and to become familiarity towards Smartphone, computer, etc.

IoT based Smart healthcare with the help of smart devices and objects improves the healthcare monitoring system effectively, thus by reducing the inefficiencies of existing healthcare system. Smart devices with new and upgraded technologies enhances the data accuracy to be collected, real-time accessibility of patient's condition, intelligent integration of data collected, maintaining the integrated data smartly through cloud service, etc. IoT along with smart devices reduce complexity and complications in the healthcare system. The penetration of mobile technologies and smart devices over healthcare system cause huge impact on the world. The full-fledge utilization of M-health and E-health applications in today's world is made aware to the people for improving and maintaining the good quality of life. Apart from regular monitoring of patients condition through M-health system, the main objective is to educate them through recommendations of healthy eating habits and effective workout routines for improving their quality of healthy life.

In remote mobile health monitoring system, the patient health parameters are recorded by a smart phone by eliminating an additional hardware and transmit data through a web interface. It facilitates end to end monitoring screen through three steps. Firstly, the real time health parameters are measured through wearable sensors and transmitted to a smart phone which shows the patient health status in graphical interface. Secondly, this system provides a data to family member and doctor through web interface for further monitoring. Thirdly, I provides real time alarm if the patient is at emergency situation such as heart attack, etc. Despite monitoring, there are quite few challenges in using the wearable tracking devices for a long time. Firstly, the daily use of wearable tracking devices is based mainly on small size, rough use and low energy consumption. Secondly, the major challenge is of the accuracy, validity and integrity of measurement data with other devices. Thirdly, the usability and the experiences of the user with the device and its friendly supporting software play vital role in continuing regular and long period use of wearable tracking devices. The use of Internet of Things (IoT)

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and its e-Health applications in the Tele-medicine health system leads to seamless flow of information between doctors and patients, thus making healthcare cost effective and improving the quality of patients' treatment. This system uses the K53 Tower System platform for e-Health applications to expose the benefits of IoT in medical system. The two fundamental aspects in monitoring people at risk are: 1) Prevention 2) Effective and early intervention during medical emergency.

III. MOTIVATION

In rural hospitals, the facilities for health caring are limited. The poor quality of health management enables issues in health care system. Everyone should get the knowledge of own health as easy and early as possible. Also it should be worth for each. Latest report of The India Spend analysis of data says that the 500,000 doctors shortage in India. WHO defines the doctor patient ratio will be 1:1000 which has been failed in India.

In developing countries there is lack of resources and management to reach out the problems of individuals. A common man cannot afford the expensive and daily checkup for his health. For this purpose various systems which give easy and assured caring unit has been developed. These system reduces time with safely handled equipment.

IV. OBJECTIVE

- To develop health monitoring system i.e. it measures body temperature and heart rate.
- To design a system to store the patient data over a period of time using database management.
- To do analysis of collected data of sensors

V. PROPOSED METHODOLOGY

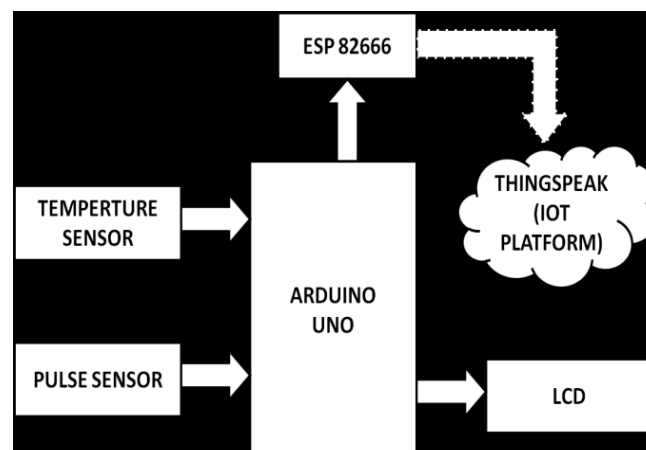


Fig 1: Block diagram of system

Fig 1 shows the proposed system. The health monitoring sensors are used to collect health related data i.e. for data acquisition. Communication can be done by controller for sending data on internet wirelessly. Data processing has been done at server. All data collected and aggregated at server point. To get health related information in understandable format it can be shown on web page i.e. data management.

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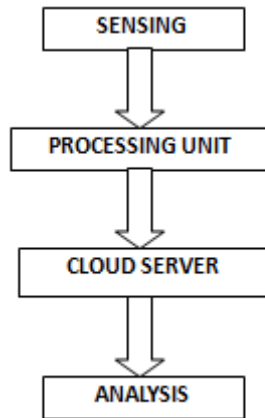


Fig 2: Working of system

Fig 2 shows the working flow of system. The results collected from sensor are analyzed i.e. if abnormal behavior has been detected, then emergency plan activated to inform the Doctor about patient's health. So it reduces critical conditions in Hospital.

VI. RESULTS

Fig 3 shows the interfacing of controller to sensors & LCD.

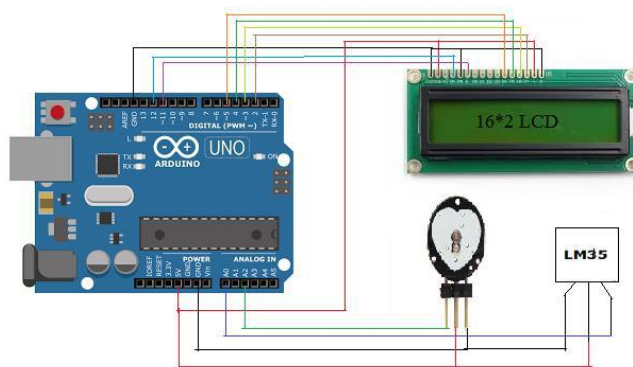


Fig 3: Interfacing of LCD and sensors with Arduino

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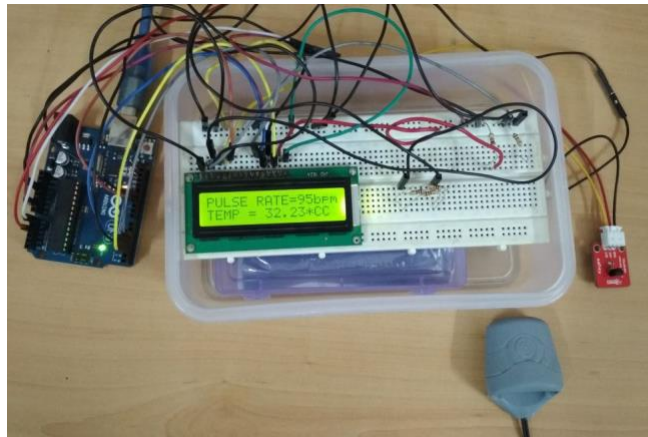


Fig 4: Setup of System

Fig 4 shows the Output on LCD of pulse sensor and temperature sensor.

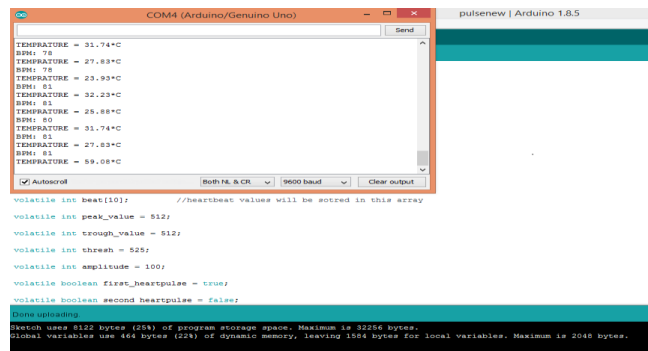


Fig 5: Simulation of system on Arduino IDE

Fig 5 is the simulation window of Arduino IDE of program

Fig 6 gives parameters that is temperature and pulse rate is shown online on IOT platform

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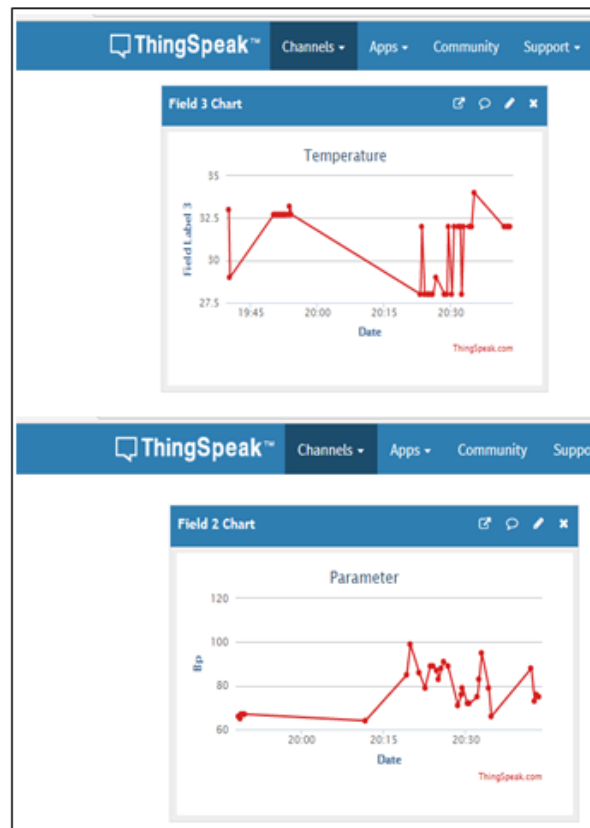


Fig 6: Graphs of sensor output

VII. CONCLUSION

This paper focuses on a real-time pervasive healthcare monitoring system using IoT and cloud computing service which is more beneficial for elders and chronic diseases' patients. The current methods available for realization of Healthcare services are surveyed and the challenges that are part of realization are also highlighted. This paper proposes an intelligent real-time patient monitoring system that monitors the subject's vital parameters such as temperature, pressure, fall detection, breath activity and ECG through PHD prototype model as well as detects any abnormality accurately. Appropriate medications are suggested based on the diagnosis of the provided set of symptoms. The system sends an alert message to the caretakers and doctors in case of any abnormality through WBAN. The system enables the clinicians to optimize the usage of available medical resources and minimize the costs in monitoring the patients. In the future, we will focus on improving wearing sensor experience by using softer materials and enabling controlled sharing of information among the doctors, the patient, and the patients' family through social networking paradigm

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