IoT based Health Monitoring System and Challenges

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Abstract - *In the recent years of health care development, we witness huge amounts of data flow to track few parameters of a person and alert the guardian in case of any emergency of the patient this establishes a need for a single platform where users can monitor the data on a real time basis. This paper talks about health monitoring system which allow patients to be monitored without having a need to visit the doctor which can be implemented with market sensors. The module gives the necessary opportunity for all day service for the patients which Can be recorded by the doctor and can receive a notification in any case of emergency these platforms forms a great use when a patient is under frequent check up or under home care for a long period of time.*

***Key Words*: Health, Monitoring, Sensors, Parameters, Remote, Cloud Computing.**

1. INTRODUCTION

The unpredictable growth of the Internet Of Thins, is changing the world and the rapid drop in price for typical IOT components and thus allow public to communicate and to innovate new designs and products at home. The Internet of things is a rising topic, while the use of sensors and other parameters .Processors and other electronic application used for communication throughout internet and becoming one of the main part of internet. IOT helps with the communication and interaction of each other. This IOT based system helps in finding out many solutions for the particular problem in an effective way. IOT helps in every day to day aspect of life such as in overseas connectivity, where one can communication over a long range of distance with a variety of methods such as face time class, sending important documents in a very short span of time. Similarly to that even Health care applications have received a major benefit using IOT.

1.1 Need of a Health Monitoring System

Health care now-a-days is a very much a topic of concern that need to be solved with quick and effective remedies. Where the major role of IOT come into scenario , where the patient can concern their respective doctor from there home and can get treated on time , irrespective of only the treatment, IOT can help the patient to take test regarding their concern issue and even share the result(report) to the person or doctor of there choice. Where the doctor can see the reports of the patient and guide them in particular concern areas. Even one can book appointments for the doc visit that also online via a face time call, where the patient an consult the doctor in front of them , though sitting at home, and doesn't require to travel a long distance, which could benefit them in several ways.

The basic idea of this project that is health monitoring system, it tells us about a particular persons medical parameters like heart beat, temperature, etc. during the emergency situations

It also tells us about the medical observations, remote observations. To achieve personalised and high quality health monitoring by means of new technologies, such as mobile network and cloud computing platform. In this project framework of an Health monitoring system based on cloud computing platform is designed to implement pervasive health monitoring.

1.2 Literature Survey

Joege Gomez: Developed a personal health diagnosis based on the symptoms of the patient A huge amount of collected data is used to analyse the diseases and risk of the patients. Franca discussed that the innovation of the new generation systems are the development of continuous monitoring features of the patient and the improvement of workflows and productivity of medical personal

Giovanni Baldus : Developed an approach to maintain health care of a patient collected in different geographic locations. The data is available to doctors, hospitals, laboratories etc.to check the medical history of the patients.intelligent systems. Which detect the disinfected articles and alert the medical staff to wash hands after the contact with the disinfectant articles.

Franca Delmastro: Data sensed and transmitted through the wireless device are received in the local System that needs to support accessing of the data in heterogeneous formats, can be useful in building real time applications and to be updated in the mobile application of the doctor as well as the user.

Pioggia, IOT techniques can be used to promote healthcare in a better way. The health related information could be interacted with doctors who are in emergency.

2. Proposed System

A health monitoring system consists of various sensors connected to a patient such as temperature sensor, heart rate sensor, an emergency key which acts as a sensor and they communicate the data through the processing unit. In this project a Node Micro Controlling Unit is used as a data aggregator which is an open source and IOT platform as well. The patients and doctors smartphone are used as a monitoring system interfaces. Data obtained by the system is stored on cloud computing platforms for further research and data analysis. GPS unit is also installed on this project to relay accurate location of the user. Further a buzzer is installed to alert people in the nearby vicinity in case of emergency or distress.

2.1 Implementation

Implementation begins with a power source which is a 12 V battery connected to a 5 V regulator giving supply connection directly to the Node MCU. Further internal connections are made from the Node MCU to Heart Rate sensor, Temperature sensor, Buzzer & Relay, LCD screen, GPS module and the Emergency key. The GPS module has provisions for keeping the system connected to Internet and Cloud services.

The Software used is open sourced application called BLYNK which is mainly used for student use and prototype implementation.

2.2 Block Diagram

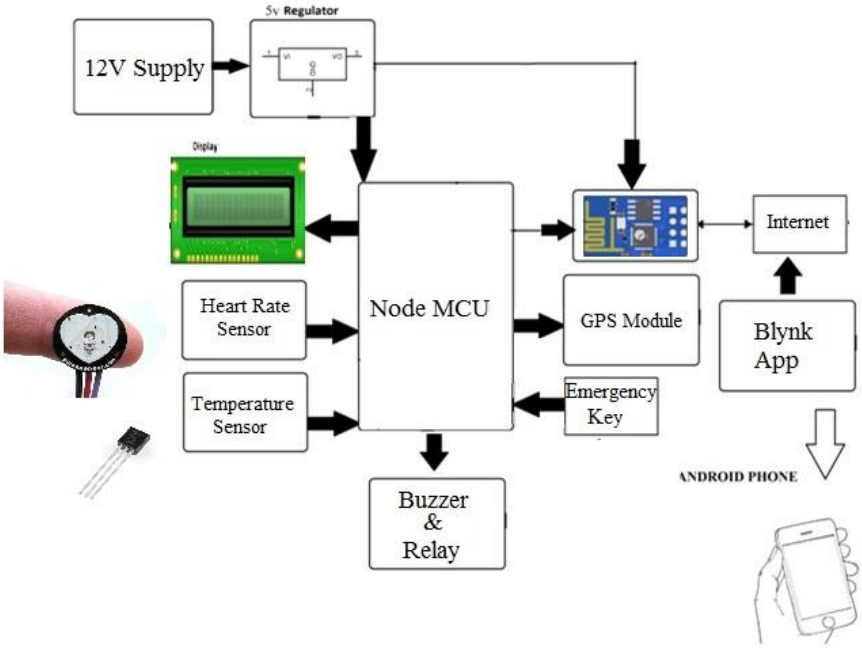

Fig -1: Block Diagram

As in the block diagram the sensors system is used to obtain information or readings of the patients health parameters and the readings are converted into signals. These signals are provided for processing to Node MCU which is the IOT module. The node than displays the information on a monitor and also stores the information using the cloud computing. This information can be accessed by the doctors and the patient on phone/computer and get the information. If there is any emergency situation the patient is sent an alert automatically through the mail for further medical medication.

3. CONCLUSIONS

IOT Technology is an integration of various technologies which enables different devices and objects to interact with each other and use different network technologies. The proposed system gives better and effective health care services to patients and the information collected is networked worldwide through internet and communication devices in turn connected to cloud services and doctors can use this data and provide a quick and effective solution. The proposed model is a well equipped system where the doctor can check his patient anywhere, anytime. Emergency alert e-mail is sent to the patients if the threshold value is reached that to consult the doctor. This system is helpful for patients who are advised for the complete bed rest and the paralysed patients, where the doctor can physical monitored the patient. The aim of the proposed framework is to adopt a new production of medical systems that can provide health care services for high quality and low-cost patients using this combination of large data analysis, cloud computing, and computing technologies. The enhancement for the designed system will connect more sensors and connect all the objects to the Internet for quick and easy access. Further enhancement of existing model can also be deployed as a mobile application in order to become easy to access the model around the world. The mobile application can be enhanced with the ambulance services, doctor's list, nearby hospitals. The patients who are advised for the complete bed rest and the paralyzed patients can also be monitored and given precautions by the doctors. The system is implemented for one-to-one access, which can be implemented for many by giving unique id for each member/patient in the home or the hospital

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