HEALTH MONITORING SYSTEM FOR ELDERLY PEOPLE

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HEALTH MONITORING SYSTEM FOR ELDERLY PEOPLE

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Abstract--- Nowadays Health Care sector is developing in terms of science and technology by using Wireless-Sensing node technology. Care must be taken in order to maintain good health or else it might affect almost any part of body. Patients are facing a situation of unpredicted demise due to many reasons like heart problems and heart attack which is because of non-availability of good medical support to patients at the necessary time. In order to get rid of all such problems our project aims to wipe off such sudden deaths by using Patient Health Monitoring that uses sensor technology and uses internet to communicate to the loved ones in case of problems. This project is especially developed to ensure good safety of health of old aged patients and informing doctors and their loved ones about their health conditions at any given time. This system uses Temperature and heartbeat sensor for tracking patient's health. Both the sensors are connected to the Arduino-uno. In case of any adverse changes in patient heart-rate or body temperature alert is sent about the patient using IOT. Thus Patient health monitoring system based on IOT uses internet to effectively monitor patient health irrespective of the availability of doctors**.**

I. INTRODUCTION

Nowadays health became the primary concern of any individual. It might be because of several reasons like looking after grand children of their generations or excitement of how life would be after some years and many more. This system uses IOT to continuously monitor health of elderly people. IOT in the health monitoring system has given a big advantage in the development of modern medical treatment . Due to advances in VLSI technology, the sensors have become smaller which has enabled the development of wearable solutions. Due to consistent internet connectivity, the devices are becoming more efficient and powerful. IoT based health monitoring devices monitor a patient 24/7. At any crucial moment, the devices generate necessary signals by analyzing statistical data. As IOT based devices are constantly connected to the internet, the patients can be remotely monitored and necessary measures can be taken in case of an emergency. This system not only assures good health of humans but also makes it easy to monitor health even remotely. In pandemics like COVID-19 people are very much panic to physically meet doctors for check up of the health conditions. This system might be very useful in such scenarios. Elderly people can also have a sight of hope that everything in body is working as desired by frequently checking their health conditions.

II. RELATED WORK

Some important works have been done in the field of medical science using IOT to monitor patient's health. The works associated in this field are outlined as follows.

Research in adopting wearable IoT in healthcare has been extensive, many of the applications have already been commercialised and available in the market. Existing works often focus on assisting people who experience difficulties in maintaining independent living, for example, elderly or people with certain chronic diseases [8], such as heart disease, diabetes, and Alzheimer's. For instance, Varatharajan et al. [9] present a dynamic time warping algorithm-based early detection of Alzheimer disease using wearable sensors, whilst Romero et al. [10] describe a system that diagnose and monitor Parkinson's disease. Nonetheless, it is impossible to develop a one-size-fits-all application that can address all the needs of various individuals; hence, several directions have been explored as demonstrated in the following sections.

Tamilselvi et al. [7] developed a health monitoring system that can monitor basic symptoms of a patient like heart rate, percentage of oxygen saturation, body temperature, and eye movement in IOT network. For this purpose, the system used Heartbeat, SpO_2, Temperature, and Eye blink sensors as capturing elements and Arduino-UNO as a processing device. The developed system was

implemented but no specific performance measures are described for any patient. Acharya et al. [3] introduced a healthcare monitoring kit in IoT environment. The developed system monitored some basic parameters of human health like Heartbeat, ECG, body temperature, and Respiration. The major hardware components which are used here are pulse sensor, temperature sensor, BP sensor, ECG sensor, and raspberry pi. The data were collected from sensors and sent it to raspberry pi for processing and again transmitted it to IoT network. The major drawback of the system is that no interfaces for data visualization are developed.

Oresko et al. [2] mentioned a fully functional cardiovascular disease sensing system for smartphones, identifying a tool that is developed to be the same given sufficient time and monetary resources. The developed prototype only tracked coronary rhythm in real-time, did not track heart rate over time, and could not detect any cardiovascular disease.

III. METHODOLOGY

Among the applications that Internet of Things (IoT) facilitated to the world, Healthcare applications are most important. In general, IoT has been widely used to interconnect the advanced medical resources and to offer smart and effective healthcare services to the people. The sensors can be either worn or be embedded into the body of the patients, so as to continously monitor their health. The information collected in such manner, can be analysed, aggregated and then mined to do the early prediction regarding the patient's health.

IoT is the technology of connecting everyday things embedded with electronics, software and sensors to the internet enabling them to collect and exchange data between themselves. IoT is undoubtedly transforming the healthcare industry by redefining the space of devices and people interaction in delivering healthcare solutions. IoT has applications in healthcare that benefit patients, families, physicians, hospitals and insurance companies.

IoT architecture is the system of numerous elements: sensors, protocols, actuators, cloud services, and layers. Given its complexity, there exist 4 stages of IoT architecture. Such a number is chosen to steadily include these various types of components into a sophisticated and unified network.

The components used in our system are Components: Bread Board, Jumper Wires, Potentiometer, LM35(Temperature sensor), ESP8266 Wifi Module, Pulse sensor, 16*2 LCD display.

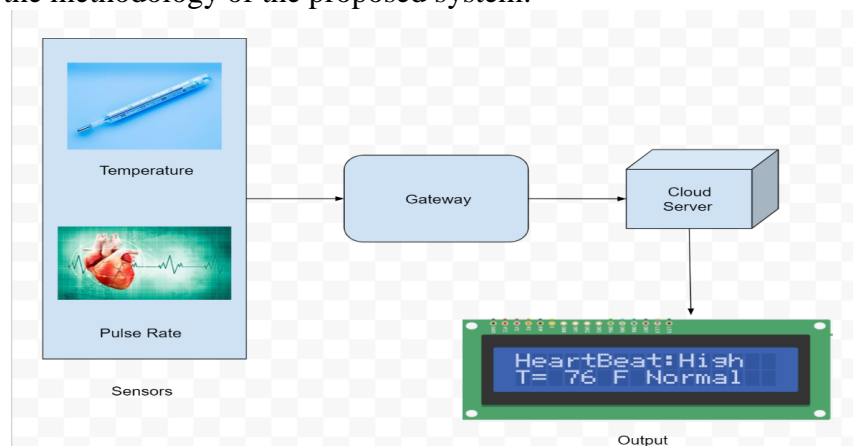The following is the methodology of the proposed system.

Fig.3.1 The system of IOT

Data Collection is the initial most work for any type of project. This process must be done accurately for getting accurate results. This system uses sensors to collect data from patients. Sensors must be good i.e. they must be sensitive to the measured property. If sensors does not input data accurately it may result in severe problems like if the sensor reads a critical value even though the person's health is normal it in turn panics the patient as well adversely affecting their health to bad conditions.

Data collection will be done by keeping patient's finger on both the sensors i.e. temperature sensor and pulse sensor. We used temperature sensor and pulse rate sensor. Temperature sensor is used to check the patient's body temperature. For measuring temperature LM35 sensor is used.

Sensor reads the value in Celsius for temperature which is directly digital input. Pulse sensor generates a graph in analog input which will be converted to digital in aurdino code. Audino code is written in C language.

As soon as the data is collected and power is on in the IOT kit the values collected from sensor will be uploaded to cloud. Sensor values are read in the aurdino code written. In code we will set threshold values for both temperature and pulse. Threshold values for temperature are set to 98-101c .If temperature sensor reads values below 98 or above 101 patients families can monitor health which can be viewed by the generated link in Serial monitor . Threshold values for pulse sensor are set to 60-100bpm i.e. if pulse sensor reads values below 60bpm or above 100 bpm patient realted members can take necessary actions immediately.

Sensor reads the value in Celsius for temperature which is directly digital input. Pulse sensor generates a graph in analog input which will be converted to digital in aurdino code. ESP8266 wifi module is used to generate link in serial monitor which is given to both doctors and patients relatives so that they can monitor patients health remotely. Through this link any person who has internet connectivity can open the link and monitor patient's health. The temperature and heart beat are also displayed on the LCD screen.
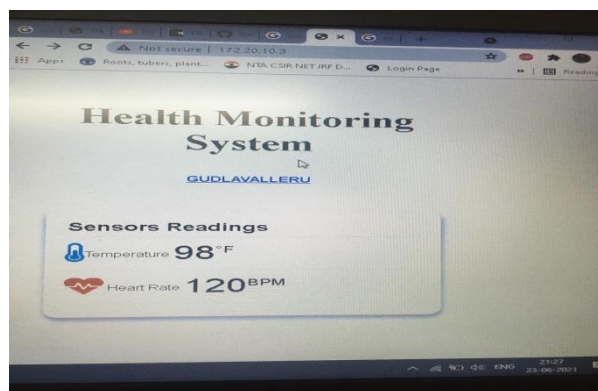
IV. RESULTS & DISCUSSION

The output is seen through the user interface which can be viwed by the link generated by ESP8266 in serial monitor. Any person who has intenet connectivity can monitor patients health remotely.
In LCD Display

In web page

V. CONCLUSION

Thus, the proposed system will gather, reading of various important indications of the patient and after that evaluate at cloud then caution the doctor or concerned individuals about the health condition. It monitors the vital signs and sense abnormalities. These abnormalities alert the medic medical staff which reduces the manual monitoring. Now a days most of the patients are unwilling to be crowded in hospital's and wait for long hours for small purposes despite of exactly knowing whether they are affected with a disease or not. This project aims to make this process remotely going on without help and intervention of others.

VI. FUTURE WORK

This system can be extended in best ways possible. One of way is two way communication between doctors and patients. Here doctor can suggest any remedies which decreases the effect of

Health of elderly in which the elderly can sustain until they reach doctor. Further a bot can be build which monitors health of person and suggests required medicines despite of the availability of doctor.

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