Cloud based smart wireless and health care monitoring system

Nithya Priya S, Ranjit Kumar M and Nibin Sabari Anand N
Assistant Professor, Sri Krishna college of Engineering and Technology, Coimbatore
Student, Sri Krishna College of Engineering and Technology, Coimbatore-641008
nithyapriya@skcet.ac.in

Abstract People are facing several health issues due to the stress and unhealthy food habits. But the greater issue being the ignorance towards these two. On this regard we proposed a new idea that is a smart blood pressure and glucose level monitoring system through sensor monitoring system anybody can measure the blood pressure and glucose level, this sensor was interfaced with IOT through raspberry-pi. At first the data of the person’s average blood pressure and glucose level is stored as a data in cloud, and as per the measurements of daily or monthly basis the data will be compared with the cloud through HTTP and MQTT Protocol. If there any changes found in the data, it will automatically forward the message to the hospitals through that the doctor can suggest the person regarding daily routine food through this we can avoid major health problems.

1. Introduction
In this Generation the technology is developing gradually, but the awareness of health among the people were not created enough. The unhealthy food habits and also the stress causes one of the reason of increasing blood pressure and the glucose level, ultimately the upcoming generation also followed by these problems. The government also made many initiatives to create awareness the only awareness not going to help the people, further the precautions should also have been given to the individuals. The paper proposes an idea that the data of the following patients is been retrieved and the following data is handled by the medical consultancy. The required precautions will be given by the doctor to that person, before that the retrieved data will be compared with the average blood pressure and glucose level of that person then if it found any abnormalities it will intimate the consultancy through IOT this process going to take place.

The remaining contents of the paper framed as follows: 2. Related works of the proposed system. 3. It consists of implementation and it is also covering the different components that is going to be installed along with the module. 4. we conclude.

2. Related Works
In recent days IOT has attracted the researchers and it also creates the potential to investigate, as well as it acts as a mediator of healthcare system. In medical field there is more demand for IOT it is used to share the information and also acts as a tool to communicate with others

The review about the future scope is now a day the precautions will be given by the medical consultancy or doctors handling the particular person data. In future this won’t be done by the doctor or the consultancy. The precautions will be predicted and it will be analyzed through machine learning there will be no person behind the communication to instruct. Artificial intelligence will take care the person data as well as his health care problems

Glucose level can be measured according to three types which is invasive technique, minimally invasive and non-invasive. In this invasive technique will be more accurate the fluids from the body is taken out
and it is measured using glucometer. The finger prick technique is the inexpensive technique it is most familiar and followed by most of us. The fluids might also be extracted from forearm, upper arm, base of thumb and thigh, but the accuracy of glucose level won’t be clear as compared to the fluids taken from the fingertip.

In this paper we proposed a idea of using non-invasive glucose monitoring sensor and blood pressure monitoring sensor. In which the non-invasive glucose level monitoring technique is to reduce the pain in blood extraction and insulin injection. The methods used to detect the glucose level are ultrasound, infrared, fluorescence these are the various methods to detect the glucose level using non-invasive method. The blood pressure monitoring sensor is used to analyze the pressure level by and it is easily accessed by the individual, it is also used to change the medications and the changes in daily routine food can be followed in order to reduce the blood pressure level.

Advantages: There won’t be any physical interaction between the doctor and the patient so visiting hospitals for minor problems can be reduced.

![Figure 1 diagram of health care monitoring system](image1.png)

![Figure 2 Diagram of cloud data transmission](image2.png)

3. Methodology

The ultimate aim of the proposal is to

- To get the precautions easier so that the major health problems can be avoided in the upcoming years
- To provide faster and easier way of communication to the person who’s accessing the device
- Collection of accurate data from the user
- It is an user friendly system and it provides simple way of accessing the device.
3.1 System workflow

At first the sensors get the data and the next the data is been processed and finally the data transmitted.

3.2 Device used

The system architecture consists of blood pressure sensor, glucose level monitoring sensor and raspberry-pi. Raspberry pi

The raspberry pi is the smallest and the cheapest computer that can be easily interfaced with the pc. It can be accessed by the people at any of ages provides the easy way of computing and it provides the platform to learn languages like python. It can be also controlled through IOT.
The data will get received to the raspberry-pi through the sensor and the data manipulation takes place and the manipulated data get transmitted to the cloud database from that the doctor or medical consultancy can be able to read and write the data.

Fig 5: Represents the picture of raspberry-pi

3.3 Blood pressure sensor

The blood pressure is the pressure of blood from arteries as it pumped around the body by the heart. The heart contract and pushes during this process the blood is get forced through the arteries. The pressure is been recorded as two type- systolic pressure during heart beat over the diastolic pressure (the heart relaxes between the beats). This part is measured using sphygmomanometer.

The SUNROM-1437 is used to measure the blood pressure. The pressure won’t remain constant at all times it will change in day to day life. Because of the food habits we following in our day to day life.

3.4 Glucose level sensor

The non-invasive glucose level sensor is used to measure the glucose level of the patient without pricking the blood. It works on the principle of beer lambert’s law if an optical transmitter and receiver is placed opposite to each other on the alongside of the finger the receive light intensity at RX will be depending on the following parameters reflection by skin and absorption scattering by platelets and obviously the amount of glucose present in the blood sample. The above states properties are utilized to develop the prototype model the glucometer has a sensor which captures the reflected light intensity after it passes through the skin and affects the value in terms of voltage. The following code in raspberry-pi will convert the voltage to equivalent glucose level. The technology is in developing stage in future the non-invasive sensor going to play a important role in medical world.

Global system for mobile
GSM was developed as time division multiple access for communication process. A GSM digitizes and send the data to the different streams of client data. If we want to access the raspberry-pi at any part of the world without any wi-fi access point a digital cellular network maybe used.

On hardware side GSM module is used it is also called as GSM modem. The modem is get interfaced with raspberry-p and similarly moreover all the modems use3 a serial RS-232 communication. The GSM is not only accessed through WLAN network it can also be accessed through internet through TCP server. The SIM800 chip had lot of variance and it is available in several module and also it is accessed through 4.5v power supply. The SIM800 chip is used because it consumes only less power and it is used for faster way of communication.

4. Conclusion

The review about the future scope is now a days the precautions will be given by the medical consultancy or doctors handling the particular person data. In future this won’t be done by the doctor or the consultancy. The precautions will be predicted and it will be analyzed through machine learning there will be no person behind the communication to instruct. Artificial intelligence will take care the person data as well as his health care problems.

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