DIABETIC PATIENTS MONITORING USING IOT

[1]Thiyagarajan P, [2] Sripriya N
[1]Assistant Professor [2]II MCA Student
[1] [2]Department of Computer Application,
Priyadarshini Engineering College, Vaniyambadi, Vellore, Tamilnadu, India

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Abstract : IOT smart connected in the smart health care system. IOT (INTERNET OF THINGS) smart health care system major important role in our days. Networked sensor, either on the body or embedded in over living environment make possible the gathering of rich information .Indicating of our physical and the mental health.
        In this, paper in vaccine and continuous diabetic patients were monitoring the body glucose level diabetic patients maintain their blood glucose level, body temperature, blood pressure .This paper were system architecture diabetic patients monitoring and tracking of patient's health continuously. Raspberry bi devices which collects the all device sensors information and transfers the data patients send the data regularly to doctor .the data were real-time sensor were used their blood pressure sensor(BM P180),body temperature(IMP36),weight management, Pulse and oxygen in blood sensor(SP020),smart sensor . Diabetics' patients daily the patient's details are updates regularly.

IndexTerms - IOT, Glucometer, body temperature (TMP36), blood pressure (BMP180), pulse and oxygen in blood sensor (sp02), smart sensor, Raspberry pi devices.

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INTRODUCTION

IOT can be viewed dynamic networks when physical and objects were interconnected together.IOT advanced technology were important roles now a day and future. Data were transfer in relaties smart health care system were most advanced new a day using IOT, health solution fitness and wellness, disease management diet or nutrition monitoring application.IOT is the fastest growing technology in the wireless communication .IoT where connect the real world objects everywhere and any time.iot is used day by day life . The most where smart monitoring, smart city, smart environment, smart medicals, etc…..

It system were communicates between the network connected system, devices, sensors and application the types in the health care system for patients and doctor for monitoring, tracking and records. The information are in real data and medical information collection of data were real time from of various sensors sources in the case many numbers of patients for large period of time as very easy and medical services are by the smart sensors were accurate measures, analysis and monitoring in the health status it indicates health science such as the pulse rate and blood pressure oxygen, body temperature, heart rate and glucose level.

The way of communicating and interacting the patients and the doctor changing information and getting day to day .this health care results are reduction the health care costs is using widely .The patients were continuous period of time through smart connecting on the interconnecting networks.

Diabetic's patients monitoring system using in IOT. In this paper, the Diabetics patients were monitor their body condition in home itself and then sends the whole data regularly through by the RASPDERRY-pi devices.
Diabetics patients were should maintain their body condition properly and then correctly maintain Blood Glucose level, regular. Blood glucose level were proceeds in the patients taking foods and Doing workout. Normal, Diabetics Patients were properly maintain their body in Body Temperature ,Blood Pressure, Weight Management and taking proper food correctly

DIABETIC PATIENTS

Diabetics are the when "Blood glucose "blood sugar is too high. Blood glucose is main type of sugar funds in the blood and in the main source of energy. The Glucose comes from the food eating and is also in Liver and Muscles.
The Pancreas an organ located between the stomach and the spine with digestion that release a hormone it makes called the Insulin, into blood. Insulin helps patients blood carry glucose to all their body cells. Sometimes Patients body does not make enough insulin or the insulin does not work the way it should. Glucose then stays in blood and does not reach patients cells. The Blood sugar is too high is called Prediabetes. There are two types of diabetics.

Type:1 Diabetics Can also developed in adults age .The patient's body no longer makes insulin or enough insulin because the body immune system taking shots called as INJECTION of insulin. Treatment - Sometime taking the medicine by mouth, making healthy food choice, being body physically active, controlling their BP levels and then cholesterol.

Type-2: Diabetics can be also developed in middle age and other people even also children .the people were weight and inactive .the patient's body beings with insulin resistance condition that occurs when fat, muscle and liver cells do not use insulin to carry glucose into the body cells .Treatments-taking diabetics medicines, making healthy food choice, being body physically active, controlling BP, Cholesterols levels

In This Paper Model, the Diabetes patients were sends the information about their body condition were the glucose level Before eating meal and after eating meal Testing through the devices and the also checking the Blood Pressure, Body Temperature, Pulse and Oxygen level in blood .
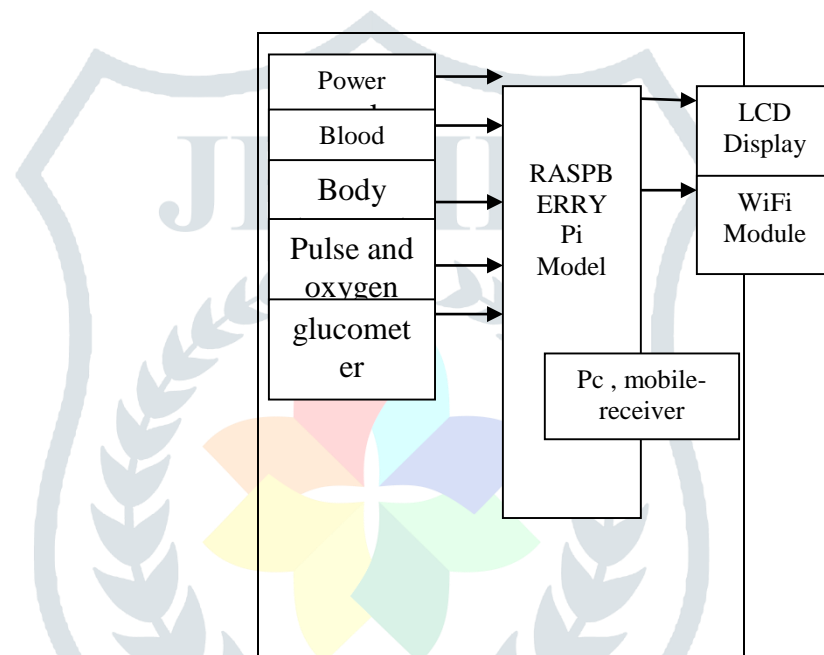
This details are collected through in the RASPBERRY-pi device .Raspberry-pi device which collected the data from through the sensors and sends to the doctors.

PROPOSED SYSTEM

The Main source of Diabetic system at present stage is when patients check their blood glucose levels and other by testing themselves at home. This paper presents an efficient system to overcome the drawback whenever less of data regular and missing some important Information.

This paper ,the Proposed system were consists of Raspberry-pi device which carry out the information through in some sensors – Blood pressure(BMP180 pressure sensor),Body Temperature(TMP26) and pulse ,Oxygen in Blood sensor(SPO2) and blood glucose level data collected in glucometer, power supply units.

The Block diagram for health care system is as :

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┌──────────────┐       ┌──────────────┐       ┌──────────────┐
│ Power        │──────▶│              │──────▶│ LCD          │
│ Blood        │──────▶│ RASPB        │       │ Display      │
│ Body         │──────▶│ ERRY         │──────▶│ WiFi         │
│ Pulse and    │──────▶│ Pi           │       │ Module       │
│ oxygen       │       │ Model        │       └──────────────┘
│ glucomet     │──────▶│              │
│ er           │       │  ┌────────────┐
└──────────────┘       │  │ Pc , mobile-│
                       │  │ receiver    │
                       │  └────────────┘
                       └──────────────┘
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RASPBERRY-PI

The Raspberry pi based on the Broadcom BCM2836 processor which include ARM Cortex-A7 based quad core processor which runs on the 900MHz and has RAM of capacity 1GB.Raspberry pi required 5v 2A power supply. It has co-processor which provides open GL ES 2.0, hardware accelerated Open and 1080p30 H.264 high –profile decode capable of 1.5Gtexel/s or 24GFLOP with the texture filtering and DMA infrastructure.

It also have one display serial interface, one audio output, four USB connector, for pin GPIO connector, camera connector and one high multimedia interface to connect to various peripherals' this paper the raspberry pi which connects some of sensors the collects information from smart sensor then transfer data patients to doctor regularly

Raspberry-Pi

Glucometer Glucose level Monitoring

The diabetic patients should checks their blood glucose level regularly because of based on glucose level report the doctor will predict the medicine. So the Glucometer is a medical device for testing blood glucose .It can also be strip of glucose paper dipped into substance and measured to the glucose chart. By some steps below given ways the glucometer which is which to checks the blood sugar.

Test strip

Drop of blood is used for measurement. For some models the element is plastic test strip with a small spot impregnated with glucose oxidize and with other components. Each strip is used once and then discarded. Volume of blood sample: The size of drop of the blood need by different models varies from 0.3 to 1 μl. Testing times: The times it takes to read test strip maybe at range from 3 to 60 seconds for different models. Display: The glucose value in mg/dl (or) mmol/l is the displayed on a digital display.

Glucometer testing

Body Temperature Monitoring System

Body Temperature sensor which is check the temperature in our body. In this paper TMP36 sensor which is used for diabetic patients to monitor their temperature level in their home itself.TMP36 is low voltage, precision centigrade temperature sensor. It provide a voltage output that is linearly proportional to Celsius temperature, and output scale is 10 mV. Advantage of this temperature sensors s it doesn't require any external calibration to provide typical. It use n ADC to end output voltage on out pin, and can be converted to temperature   easily.
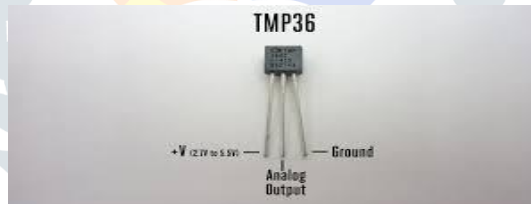
Temperature TMP36

Blood Pressure Monitoring System

This sensor which is used to testing BP level which is low or high by our own itself. In our daily lie sphygmomameter is most common device used to measure blood pressure. The Sphygmomanometer is composed of cuff, which can be inflated by manually .the cuff need to be inflated to 180mmHg Then open the valve to release is from the cuff .taking note the BP level which high or low .AT these processes, ADC will convert all the signal reading from pressure sensors and then sends them to raspberry pi for further next level.

Blood pressure BMP180

Pulse and Oxygen in Blood Monitoring

In this pulse and oxygen in blood sensor it is measure taken .In particular for everything relating to vital organ oxygenation. By measuring oxygen saturation, we can calculate amount of oxygen dissolved in arterial blood and carried by hemoglobin and deoxyhaemoglobn. The wavelengths in light spectrum, at 660 and 940nm.and then it send data to Raspberry pi device patients pulse and oxygen level in body.


Pulse and Oxygen in blood sensor spo2

Smart sensor

Smart sensor which collect all inserted sensors in raspberry pi which used to patient monitoring details' his is sensor enable more accurate and the automated collection of environmental data with less error amongst with the accurately recorded information. These devices are used to monitoring and control mechanisms in wide variety of environments, smart grids battlefield exploration and a great number of science applications. Then after collecting data which sends to raspberry pi then patients monitor their whole detail about their body.

Smart sensor

ARCHITECTURE SYSTEM
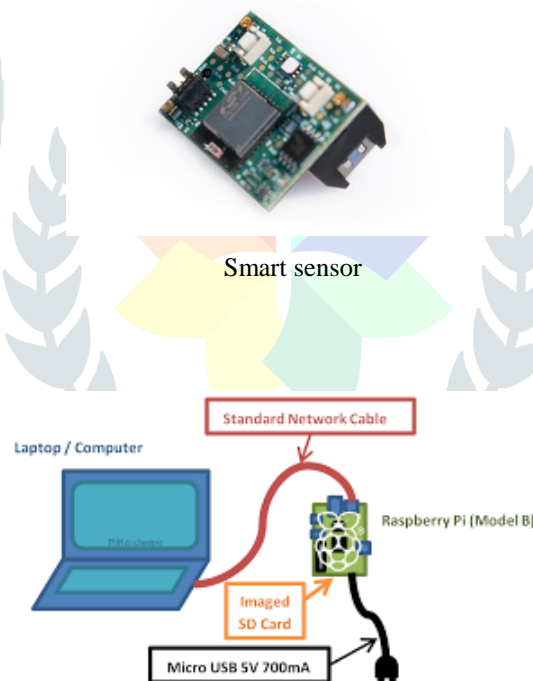
This system which works to patient were monitoring body themselves at anywhere and anytime .here Raspberry pi device which is used to collects al sensor detail through by smart sensor .Then patients sends to the their condition by mailing full detail with secure in computer system to doctor. It is advances system used technique.

Interfacing sensors

Interfacing of the sensors carried out help of operation and raspberry pi and the output of various sensors of Blood pressure, body temperature, pulse and oxygen in blood and the glucometer glucose level testing and collecting with smart sensors which sending data into the raspberry pi devices .the raspberry pi which the all data from device and send to patient personal computer and they send to doctor regularly with secure transferring system.

CONCLUSION

The objective of smart healthcare through Internet of things to provide the low cost solution with the high reliability and the real time data transfer at various points, almost negligible cost. This low cost solution on one hand save the user from high one time ,cost and on the other hand provide reliable, efficient and real time monitoring system. Another regarding our Internet of things system of coverage it can provide that is anywhere in the world is can connect wherever Internet facility is present. The objective of system is to monitor and intimate critical surveying patient's health directly to doctor and Emergency. In This Paper Model, the Diabetes patients were sends the information about their body condition were the glucose level Before eating meal and after eating meal Testing through the devices and the also checking the Blood Pressure, Body Temperature, Pulse and Oxygen level in blood .the result will be collected through in the RASPBERRY-pi device. Raspberry-pi device which collected the data from through the sensors and patients sends to the doctors regularly checkups with easy and secure manner.

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