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Pregnant Women Health Care Monitoring System Based on IoT

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***Abstract*— The swiftly mounting progress in data transmission technologies of contemporary smart objects gave an eye opening to a new era of application development for Internet of Things oriented network. In exacting, due to the effectiveness of the data retrieval with mobile objects, such as wearable equipment, several sophisticated types of healthcare monitoring system with body sensor networks have been proposed. In this paper work, we have introduced a secure Internet of Things -based pregnant women healthcare monitoring system, which operates with the Wi-Fi module interface. To accomplish system competence and robustness of communication, we utilize user entry authentication in a web page to retrieve or view the data. Moreover, the implementation of the proposed healthcare monitoring system with Arduino platform to augment the achievability and practicability of the proposed mechanisms.**

***Keywords*— Arduino board, Body Sensors, Cloud computing, Internet of things, Wi-Fi Module.**

I.INTRODUCTION

Internet of Things (IoT) is gaining prevalent popularity among research community because of its impending to digitize real world physical objects around us. IoT has emerged as a result of current wireless telecommunication services and ever-present presence of Internet. Wireless sensor networks, RFID tags, actuators and various handheld intelligent devices such as mobile phones, PDAs, Tabs etc. are foremost to the surfacing of IoT.

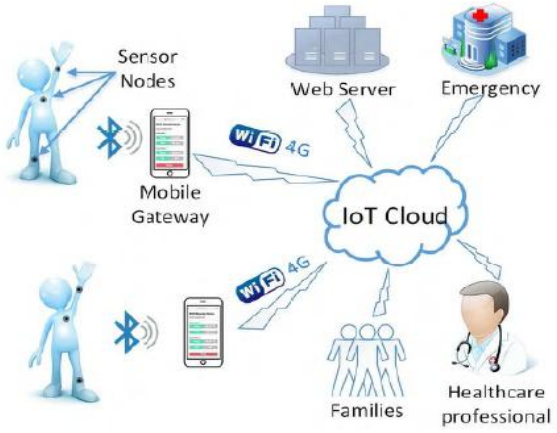

Figure 1: Diagram showing connectivity of devices using IoT Technology

II. PROBLEM DEFINITION

In today's social insurance framework for pregnant women who stays in home during post operational days checking is done either via overseer/ medical caretaker. Perpetual observing may not be proficient by this system, on the grounds that anything can change in well being parameter inside of part of seconds and in the midst of that time if guardian/attendant is not available in the premise causes more remarkable harm. So with this improvement created epoch where web administers the world gives a thought to add to another intense health awareness framework where time to time constant checking of the pregnant women is accomplished

III.RELATEDWORKS

All the correlated works that have been done are related to the current research problem are as follows :

A. *RFID Technology used IoT-based Personal Health Care in Smart House*

Shortcoming:

In this paper for the wireless communication is established using RFID technology that covers only very inadequate distance.

B. *A Health care Platform Based on IoT with the incorporation of Intelligent Packaging, inconspicuous Bio-Sensor, and Intelligent Medicine kit*

Shortcoming:

In this work only medical records are collected and convey it to the patient. Itdoesn't give the health care based information.

IV.PROPOSED SYSTEM

In this system the Arduino (ATmega328) is used to attach with three sensors namely temperature sensor (LM35), memes sensor and heart beat sensor. This acts akin to a microcontroller which collects and reads values from the sensor through the physical connection of input and output pins of the board. Wi-Fi module (ESP8266-12E) are attached in this system thus it helps to take reading and display on your mobile. The Internet of things progressively allow to incorporate device capable of connecting to the internet and endow with information on the condition of health of pregnant women and provide information in real time to doctors who assist it.

This data can be retrieved or viewed in the form a mobile at the instant of time with secured authentication. This data will be kept and stored as a backup for any kind of future reference. The main source of pregnant women health care system at present stage is that when pregnant women is at the rest position. The phenomenon like, Heart rate temperature and kicking measure can only possible to measure while the patient is in hospital or at rest position. So this project presents an efficient system to overcome the drawback whichever is present in previous systems.

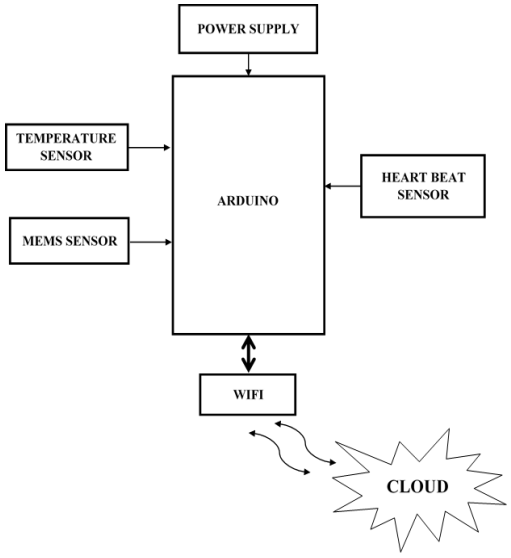

Figure 1 : Block diagram of the proposed system.

V.HARDWARE REQUIREMENTS

- ARDUINO
- TEMPERATURE SENSOR
- HEART BEATSENSOR
- MEMS SENSOR
- WIFI MODULE

A. Arduino

The main purpose of Arduino is to sense the framework by collecting the input from the connected sensors. Then it sends this data to the cloud by sending this data to a particular URL/IP address. The collected data will send to IP repeatedly over a particular period of time.

B.Temperature sensor

The LM35 measures a temperature range of -55 to 150 degrees Celsius. The temperature sensor is used to measure the amount of heat energy in our body and it is converted into static form. The main use of the temperature sensor is to measure the temperature of pregnant women and it will display the results in LCD.

C.Heart beat sensor

Heart beat sensor is designed to give digital output of heat beat when a thumb finger is placed between the LDR & LED on it. The LED will flash simultaneously at each heart beat, while the heart beat detector is working. This analog output is directly connected to microcontroller to measure the Beats Per Minute (BPM) rate of the body and it works based on the modulation of light by the gore

flows through finger at each heart beat. Its mechanism is based on the theory of light modulation.

D.Memes sensor

MEMS sensor is also known as accelerometer sensor and it is mainly used to measure the movements of the body. The three axis X, Y, Z in the accelerometer sensor shows the tilt of the fetus when the sensor is placed in the mother abdominal wall. By using MEMS sensor, the kicking measure of the fetus is measured.

E.Wi-fi module

The ESP8266 Wi-Fi module is a Security Operation Center which is self contained that is integrated with TCP/IP protocol which will give direct micro controller entry to WIFI network. It is specifically designed for mobile devices and other IoT applications with reasonable prices. The physical device can be attached to a wireless WIFI network, internet intranet, extranet communication and other networking capabilities.

VI.SOFTWARE REQUIREMENTS:

- ARDUINO IDE

A. Arduino IDE

Arduino IDE is an open source software that makes to write the code in easy manner and helps to upload it into the Arduino board and the uploaded code contains the program that describes the working of the process. The main advantage is the software can be used in any Arduino board. The Arduino can control and interact with a wide variety of sensors like temperature, accelerometer and heart beat sensor.

VII.CONCLUSION

It is designed to give digital output of heat beat of the maternal when a finger is placed on it. The temperature of the maternal can also be measured by placing a finger on it. The three axis X, Y, Z in the accelerometer sensor shows the tilt of the fetus when the sensor is placed in the mother abdominal wall. By using this approach the pregnant women and disable pregnant women in rural areas will able to do their regular checks ups on the daily basis.

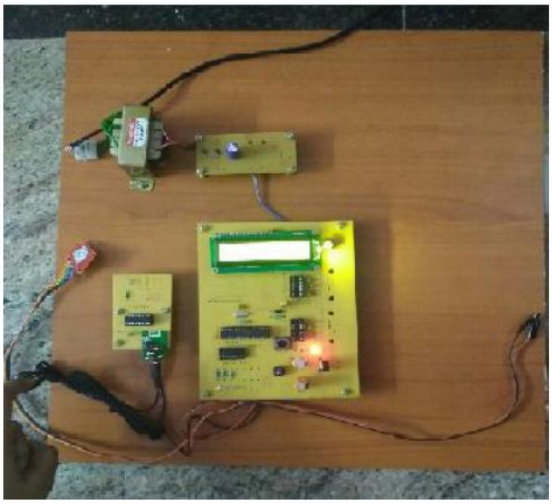

Figure 3 : Hardware Setup of the system.

VIII.FUTURE WORK AND SCOPE:

The Future work of the project is very essential in order to make the design system more advanced. In the intended system the enrichment would be involving more sensors to internet that measures a variety of other health parameters of pregnant women and would be advantageous for pregnant women monitoring i.e. linking all the objects to internet for rapid and effortless access. Establishing a Wi-Fi mesh type network would help to increase the communication range.

The scope of this system will include the intelligent system which will take the decisions or actions according to the conditions prevailing. So that the doctor's interaction with the system will be minimized this will lead to less human efforts for the monitoring. This will allow farer tovilipend the nominal warnings as system will take care of it, which will be a lucrative deal for the end user.

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