Virtual assistance for emergency situations using IOT

Relevance of topic

- **The IoT allows objects to be sensed and controlled remotely across existing network infrastructure**
- **Creating opportunities for more direct integration of the physical world into computer-based systems.**
- **The last decade has witnessed extensive research in the field of healthcare services and their technological upgradation.**
- **Connecting various medical devices, sensors, and healthcare professionals to provide quality medical services in a remote location.**
- **This has improved patient safety, reduced healthcare costs, enhanced the accessibility of healthcare services,high accuracy and economic benefit and increased operational efficiency in the healthcare industry**

Description of the Project

In medical emergencies, the victims are not able to talk about anything regarding themselves. Medical information of patients is not available at that time for doctors. Along with this, victim’ s wallet, purses, mobile, cards are frequently separated by them because of theft, or accidents. In these situations, a dedicated device that can provide the ER doctors about the patient's medical information can be very useful. The device can be described as an IOT based ‘virtual assistant’ for providing proper identification and complete medical information of every emergency patient to the ER staff and thus ensure timely and appropriate treatment decisions. It provides personal identity to that victim and medical information such as history, current condition and ensuring that the information gets available to doctors in time of need to ensure safety of family and friends. Also, one can track individual with the help of device with its software application provided with it.

Description of the Project

Technology plays the major role in healthcare not only for sensory devices but also in communication, recording and display device. It is very important to monitor various medical parameters and post operational days. Hence the latest trend in Healthcare communication method using IOT is adapted. Internet of things serves as a catalyst for the healthcare and plays prominent role in wide range of healthcare applications.

In this project, an intelligent home-based platform, the Home Health-IoT, is proposed. In particular, the platform involves health care management system with enhanced connectivity for the integration of devices and services. The proposed platform seamlessly fuses IoT devices (e.g., wearable sensors) with in-home healthcare services (e.g., telemedicine) for an improved user experience and service efficiency.

Objectives of the Study

>> Continues monitoring of health parameters of patients or elderly people at home

>> Remote monitoring of patient health via mobile application

>> Reduce human error in accessing health parameters

>> Access data for telemedicine system

>> Reduce post – operation periods at hospitals, hence the cost of treatments

>> Reduce effort of doctors/care takers

>> Automatic alert will send to care taker in case of emergency

Existing System

Incase of any emergency we need to contact caretaker or hospital through manually.
Even if the patient is under camera surveilance it can’t detect the temperature , heart beat etc.
And after reaching hospitals , the staff needs to check everything related to the patient for providing proper identification and complete medical information of every emergency patient. Which requires more time in complex cases and the patient history may not be available at that time which enhance risk in giving treatments

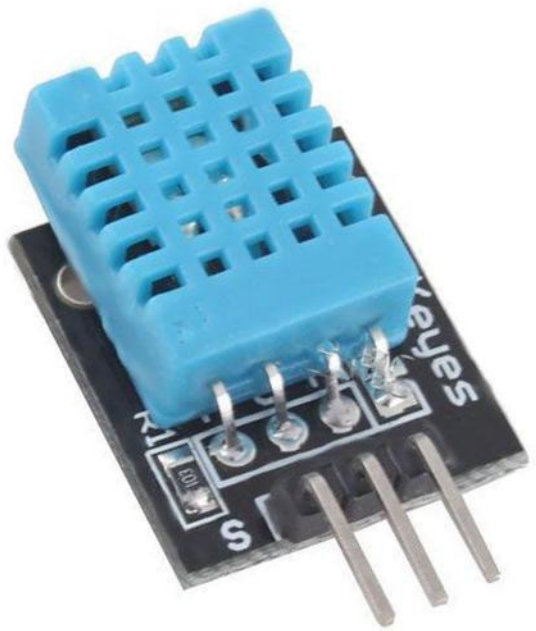
Proposed System

The Proposed System architecture for IOT Healthcare is consist of accelerometer, temperature sensor, heart beat sensor and a spo2 sensor. Sensors acquire the data of various parameters regarding patients’ health using Node MCU module and using the Internet of Things technology, stores that data and displays through the IoT mobile application, which provides access for remote monitoring and GSM module for sending alert /message for emergency contacts .The caretaker will able to select the hospital in case of extended emergency through the mobile application.

Modules

1. Patient Monitoring
2. Dangerous deterioration
3. Alert Sending
4. Caretaker App Management
5. Hospital Telemedicine System

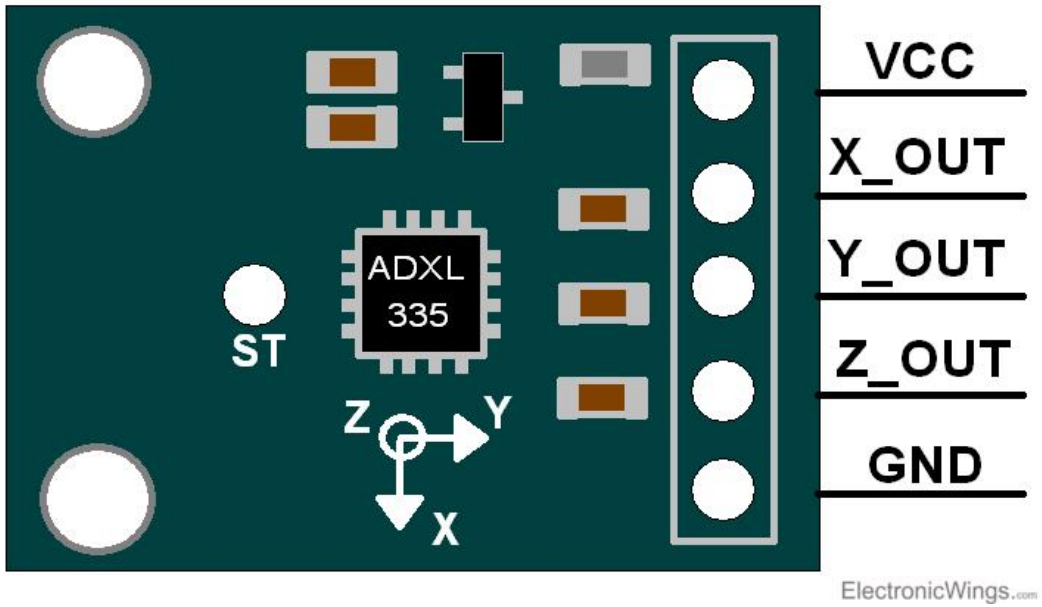
1. DHT11 SENSOR -Temperature Sensing



The DHT11 is a basic, ultra low-cost digital temperature and humidity sensor , and spits out a digital signal on the data pin (no analog input pins needed).

it has 3 pins
1) vcc(5v)
2)gnd (ground)
3)out/Data pin
Threshold range:- temperature>40 degree

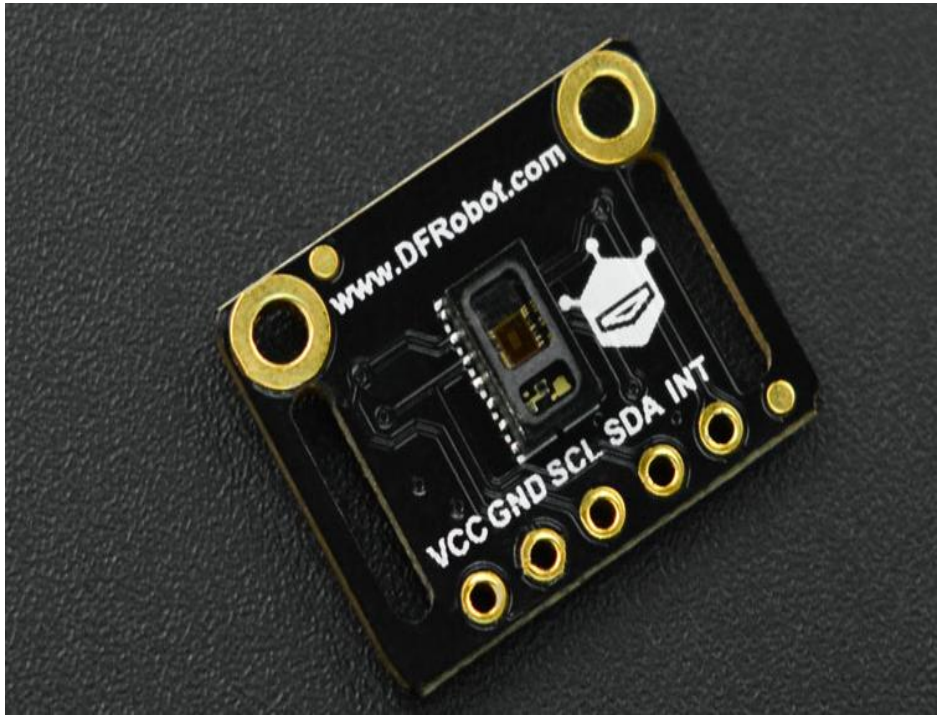
2. ADXL335 SENSOR -Fall Detection



It can be used in applications requiring tilt sensing. The ADXL335 measures acceleration along X, Y and Z axes and gives analog voltage output proportional to the acceleration along these 3 axes.

5 pins:-
vcc,X,Y,Z,gnd

3. MAX30102 - Heart beat Sensor

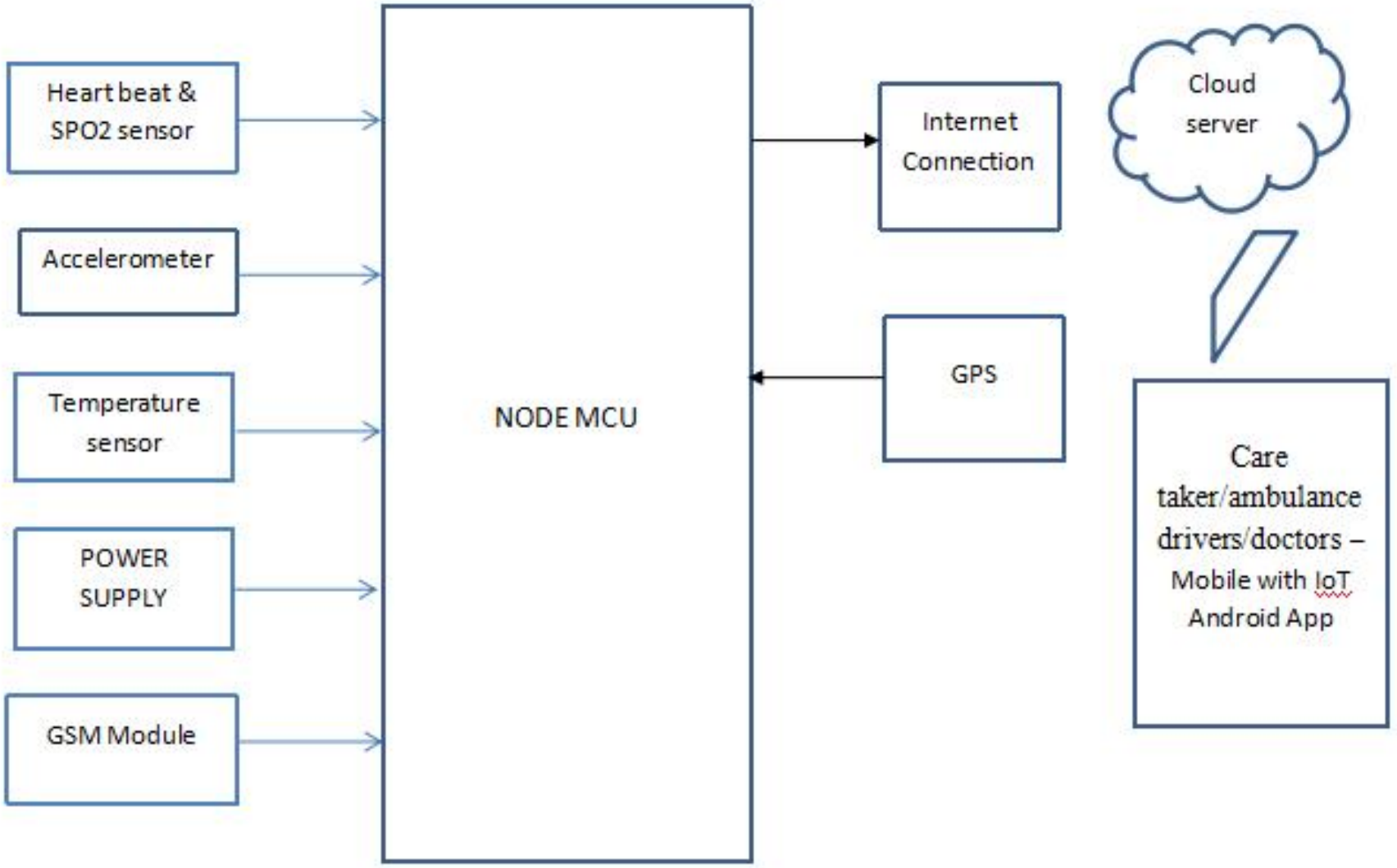


The MAX30102 is an integrated pulse oximetry and heart-rate monitor biosensor module.

5 pins:-
vcc (5v),IN,SCL,SDA,gnd

OUTPUT

BLOCK DIAGRAM



METHADOLOGY

Experimental prototyping using sensor units, microcontroller unit having IoT Connectivity. Temperature sensor, Spo2 sensor, heart beat sensor and accelerometer equipped with the module can automatically monitor the health parameters and detect any unhealthy situation of patient.

Then situation alert is communicated by IoT to the care taker/ambulance drivers/doctors. and the caretaker can choose whether or not bring the patient to Hospital or they can manage the situation using app. Location of the patient is fetched using GPS module and communicated via IoT network.

THANKS FOR YOUR LISTENING

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