

Tracking and Providing Smart Healthcare Service Using IoT

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Abstract:

The Internet of Things (IoT) provides an efficient and new life to the healthcare field. It also has a rapid development of many fields. But the more important are real in the field of medical. We focus on patient heartbeat and body temperature. This proposed system for smart healthcare based on GSM, GPS and Bluetooth technologies. The objective of this work is providing an effective application for real time health monitoring and tracking. The system will track, trace and monitor patient health, so effective medical service could be provided at appropriate time by using specific sensors the data will be captured. In case of any emergency the data will be transferred using GSM. The location will be tracked and sent to their relative mobile.

Keywords: Healthcare, Internet of Things (IoT), Bluetooth, GSM, GPS, Sensors.

INTRODUCTION:

Internet of Things (IoT) device can be mostly used to facilitate distant health monitoring and emergency healthcare system. At the present we are facing many

challenges in the real world, which have to deal realistically. By the use of IoT challenges are tracking. In recent years the tracking of internet resources has become popular and also development of the software applications. Compared to traditional system, the smart health monitoring and tracking is to provide an effective treatment at appropriate. IoT is primary technology for interconnecting all medical resources of the monitoring and tracking system. Also to combine the networking technologies that enables a wide range of applications, devices or things to interact and communicate among themselves.

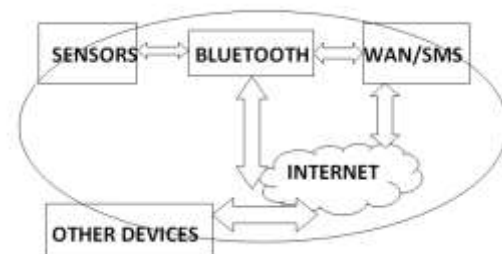


Fig.1:IoT

Internet of Things has many forms of applications including health care and industrial systems. So, health care system mainly using interconnected devices to create an IoT network enthusiastic to assessment, automatically detecting the situation and monitors the patient's, where the medical interferences are mandatory. So, IoT also can form an information network that interconnects hospitals, people's, health care devices, home environment and other work stations.

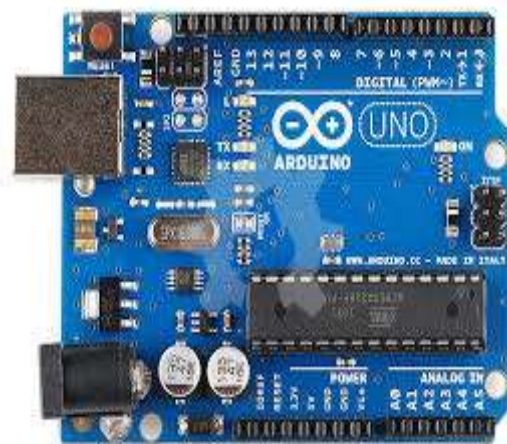
IMPLEMENTATION:

Implementation of the Internet of Things (IoT) is flexible and accessible results to allowing the health care applications to serve patient's with better treatment, also done with the remote patient monitoring and effective medical service will provide. There are some of different characteristic are needed to implement the health care service in the environment.

SMART EMBEDDED BOARD (SEB)

This sub section provides the hardware components details used to compose a smart board attached to the human body. Periodically, the smart board senses the human health condition using several specific sensors and it sends raw data to the server by using GSM.

Microcontroller (Arduino): It is the core part of the SEB design and it acts as the brain of the smart board that is holding the main board flow chart logic. However, there are many microcontrollers are available in the market and it performs well in the main board logic such as PIC, Beagle-bone, Arduino. For the sake of demonstration proposes the choice falls on Arduino UNO according to its specification and simplicity of use. Arduino UNO has a set of 14 i/o digital pins, where 6 out of 14 can be used as a Pulse Width Modulation (PWM) output pins, also the microcontroller has 6 analog inputs. The USB interface, simplifies the connection of the microcontroller with the computer, also the USB can be power supplier for the microcontroller board.



3.1.2. GPS/GPRS/GSM MODULE V3.0:

This is a GPS/GPRS/GSM shield from DFRobot. Quad-band GSM/GPRS engine that works on frequencies EGSM 900MHz/DCS 1800MHz and GSM 850MHz/PCS 1900MHz. This also supports GPS technology for satellite navigation. Sending message via GSM network. The design of shield allows driving the GSM and GPS function directly with any computer and Arduino board

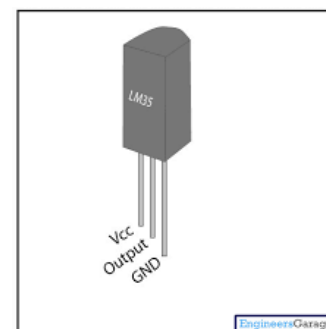


3.1.3. Heart Beat Pulse Sensor:

Heart beat pulse measurement is not an easy task; pulse sensor measure the heart rate optically, amplifies the signal and eliminate the noise by connecting the sensor directly to Arduino or any other microcontroller with working voltage from 3-5V.

3.1.4. Human body Temperature sensor :

Detecting temperature changes has become easier using LM35 which is a small thermostat type temperature sensor. It has an output voltage that is proportional to the Celsius Temperature. The scale factor is 0.01V/degree Celsius. LM35 does not require any external calibration or timing and maintains an accuracy of +/- 0.4degree Celsius at room temperature and +/- 0.8degree Celsius over a range of 0 degree Celsius to +100degree Celsius.



4. PROPOSED SYSTEM WITH ARCHITECTURE:

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<https://edupediapublications.org/journals/index.php/IJR/issue/archive>

This project is proposed for smart healthcare based on IoT. The objective of this work is proving an effective application for real time health care monitoring and tracking. The system will track, trace and monitor patient's body condition and their location. So efficient medical service could be provided at appropriate time by using specific sensors the data will be transformed to their relative mobile. In case of emergency alert message will be sent to their relative mobile with patient's current location. It is a system which can measure BP and body temperature and communicate them in cases of extraordinary behaviours to supervision medical entities using GSM, GPS and web technologies to deliver immediate actions to rescue patients life with potentiality in the future to add other factors measurements according to available sensor in the market which can achieve the objective of providing a reliable effective application for real time health monitoring and tracking

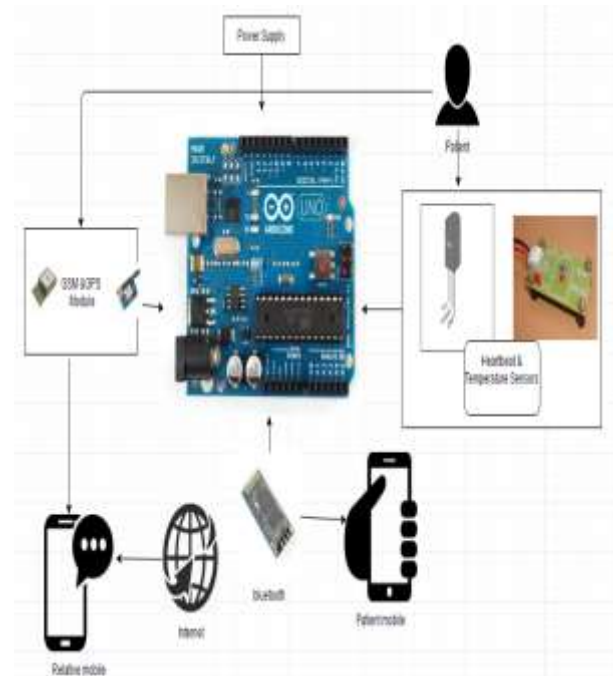


Fig: Proposed system architecture

5. CONCLUSION:

We realized IoT is the universal occurrences of things and objects that are capable to work together with each other to extend a common goal. IoT extends a set of technologies that enable a wide range of things to act together and communicate among themselves using networking knowledge. Tracking and Providing Smart Healthcare Service will provide innovative and creative solutions in real time healthcare project. The merit of this project relies on multi-uses and services by making some modification on the software many diseases and illness like Alzheimer patient could be benefited from this system.

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