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Research Paper

IOT Based Smart Health Care

Yalamanchili Navya Teja[1]*, Lavu Vooha[2], Adusumilli Rohini Priya[3] , N.V.K.Ramesh[4]*

1,2,3,4 – KLEF
**Corresponding author E-mail: yalamanchilinavyateja@gmail.com*

Abstract

As these days there is a lot of effect because of environmental pollution and other factors like work pressure human health problems are increasing to a maximum extent. Technology takes a major role in monitoring the health of a individual. This helps to have a copy of recorded values and this helps in taking immediate steps to cure the condition or a precautions needed. As it important to monitor some parameters of the patient we use some sensors. The bluetooth module helps in collecting data from the sensors and sends it to the mobile through Bluetooth and this data can be uploaded to the cloud using Mobile data. This gives perfect data for the doctors to take a decision and give a suggestion to the patient.

Keywords: *Blood Pressure; Body Temperature; Bluetooth; IoT*

1. Introduction

The expression "web of things" or "IOT" is likewise not another one. It's often utilized and has been so for a considerable length of time, yet in an overview it was uncovered that even the individuals who work in it consistently are not in any manner familiar with the historical backdrop of the IOT. That history or if The primary purpose of smart health is to use both communication and recording of data of a patient to provide medical healthcare from any distant place. It helps to eliminate distance between the doctor and the patient to improve access to medical services to remote the conditions of the patient no matter where he is present. Also, smart health becomes a path to save lives during emergency conditions by alarming the doctor. So this helps the doctor to react for the problem immediately.[1]

1. Intelligence: IOT accompanies the blend of calculations and calculation, programming and equipment that influences it to keen. Encompassing knowledge in IOT and improves its abilities which encourage the things to react in a clever route to a specific circumstance and backings them in completing particular errands.
2. Connectivity: Connectivity engages Internet of Things by uniting ordinary items. Availability of these articles is critical in light of the fact that basic protest level collaborations contribute towards aggregate insight in IoT organize.
3. Dynamic Nature: The essential movement of Internet of Things is to gather information from its condition, this is accomplished with the dynamic changes that occur around the gadgets. The condition of these gadgets changes powerfully, case resting and awakening, associated and additionally disengaged and additionally the setting of gadgets including temperature, area and speed. Notwithstanding the condition of the gadget, the quantity of gadgets additionally changes powerfully with a man, place and time.
4. Security: IOT gadgets are normally powerless against security dangers. As it can pick up efficiencies, novel encounters, and different advantages from the IOT, it would be an error to disregard security concerns related with it. There is an abnormal state of straightforwardness and protection issues with IOT.
5. Sensing: The IOT wouldn't be conceivable without sensors which will identify or measure any adjustments in the earth to produce information that can give an account of their status or even connect with nature. Detecting innovations give the way to make capacities that mirror a

genuine familiarity with the physical world and the general population in it.

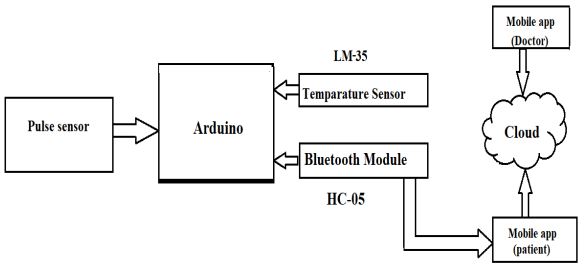


The primary highlights of Internet of things are as per the following:
Gadget Virtualization: The advantage of the gadget virtualization is Standardize joining of gadgets with the endeavor.

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Fast Messaging: The advantage of rapid informing is Enable dependable, secure, and bi-directional correspondence amongst gadgets and the cloud.
Endpoint Management: The advantage of endpoint administration is Manage all your gadget endpoint character, metadata, and lifecycle states.

2. Block Diagram



LM35

Temperature of body is a most popular common parameter measured. This sensor can be used in many of our home appliances like oven, refrigerators, air conditioners. This helps to measure at which degree the environment is hot and degree at which the environment is cool. Using this we can set the limits for the things to maintain optimum temperature which is more helpful to save our objects in refrigerators. Here at this point it helps to measure the heat in the body and this help to take precautions to maintain it.
Highlights of this sensor are as per the following:
Calibrated specifically in Degree Celsius (Centigrade), Linear at 10.0 mV/°C scale factor, it is capable of measuring temperature at 0.5°C precision at 25°C, Its range of measuring is - 55°C to a 150°C, Its advantage is that this sensor is suitable for remote control applications, and is available at low cost because of wafer-level trimming, It can work with a voltage from 4 to 30 volts, it consumes less than 60 mA current deplete, it do not get self-warming, 0.08°C impart air, Its non-linearity is just 0.25°C regular, Low impedance yield, 0.1ωfor 1 mA stack. [5]



Pulse Sensor

Heartbeat Sensor is a fitting and heart-rate measuring sensor for Arduino and Arduino compatibles. It could be used by understudies, amusement and site engineers who need to be monitored continuously to consolidate live heart-rate information. [5] Heartbeat sensor includes intensification and commotion cancelation hardware to the equipment. It's discernibly quicker and low cost demand to note dependable heartbeat readings. Heartbeat Sensor works with a voltage of 3V or 5V in Arduino board.

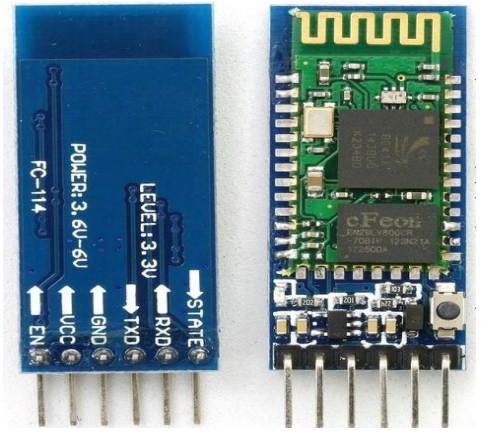
Determination of heartbeat sensor is as per the following:
Overall thickness of the sensor is 0.125" (~3mm), Voltage with which the sensor works is equal to 3V to 5V, Current required to work is equal to ~4mA at 5V, Diameter = 0.625" (~16mm).



Bluetooth Module

Bluetooth helps in short range communication. It is a wireless network which can be handled easily. It can be used for sharing information at a maximum separation distance of 100metres. The speed of data transfer is 720kbps. This is available in a form of module which can be used during connecting sensors and mobile application.

Bluetooth has many models. Here the considered bluetooth module is of HC-05. It has LED, 5V to 3.3V Regulator, CSR Bluetooth Radio, 8MB Flash Memory, Antenna which are useful while doing the transmission. This module contains RXD pin, TXD pin, VCC and Ground. TXD pin and RXD pin helps to connect bluetooth to the Arduino board and transfer of data. Using this process here we connect all pins to the Arduino and sensors will be interfaced. From this it can be connected to the mobile and data could be transferred. So that data will be visible on the screen of the mobile. This helps in reference.



MIT Companion

The new focus, housed at MIT's Media Lab, will concentrate on outlining and concentrate new versatile advances that empower individuals to learn anyplace, whenever, with anybody. The inside was made conceivable to some extent by help from Google University Relations and will be controlled without anyone else and two recognized MIT partners: Professors Eric Klopfer (science training) and Mitchel Resnick (media expressions and sciences).
Application Inventor for Android—a programming framework that makes it simple for students to make versatile applications for Android cell phones—as of now bolsters a group of around 100,000 instructors, understudies and specialists. Through the new

activities at the MIT Center for Mobile Learning, App Inventor will be associated with MIT's chief research in instructive innovation and MIT's long reputation of making and supporting open programming.



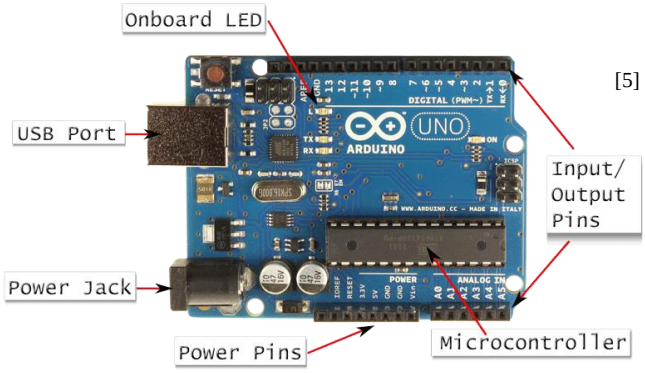
Arduino Uno

Arduino Uno could be a microcontroller board in lightweight of the
ATmega328P. Its fourteen advanced information (of that half-dozen will be used as PWM yields), half-dozen straight forward sources of information, a sixteen megahertz quartz jewellery, a USB collusion, an impact jack, relate ICSP header and a reset get. It contains everything anticipated that would help the microcontroller; essentially interface it to a work station with a USB connection or power it with relate Analog Converter to Digital Converter instrumentality or battery to begin.

3. Micro Controller

The Arduino UNO depends on ATmega328p microcontroller and it to boot has ATmega16U microcontroller.

1. **ATmega328p** It is the wheat of the Arduino associate degreed its associate elite Atmel Pico management 8-bit AVR pc design based microcontroller that's equipped for execution effective guideline in single clock cycle.
2. **Atmega16U2** This microcontroller deals with the USB association and ICSP boot loader.



4. Thinkspeak

Thing speak is an open cloud which can be used as a platform for measuring the statistics of the measured values in the form of graph or can be exported in the form of CSV which appears in an EXCEL sheet. Here we can create a channel for the specific issue and in that we specify number of fields we require. Field information will be given based on the sensors used. This has an option even to track the geographical location with the latitude and longitude values of the live location. Channel description can be given. It has two options of private view and public view. Private view, it will be visible only to the owner and if the public view is activated the data can be viewed by the users also. This will helpful while proceeding to the next stage. The Application peripheral Interface (API) keys are used to upload data to the cloud and retrieve data from the cloud. Sharing option is used to set the viewing

5. Methodology

First the sensors are designed and their output is verified. Then the sensors are connected to the mobile with the help of bluetooth and the data received from the bluetooth is uploaded to the cloud with the help of internet in the mobile. Then doctor retrieves the data from the cloud whenever required and after verifying the data if any of the values are abnormal then doctor gives suggestion in return or he advice with a medicine which is required. If any emergency is there he visits the patient at that time.

6. Conclusion and Future Scope

Using this device heart beat and temperature of the body can be measured and precautions can be taken. This device application is user-friendly and easy to handle. Here this can create an environment of wireless sensors and connect doctor with patients. It helps for the personal care at any time. These sensors can be arranged and be placed in hand belts.

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