

An Architecture for Health Data Collection Using Sensors

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1 ABSTRACT

Internet of Things (IoT) is a new technological paradigm that can connect things from various fields through the Internet. For the IoT connected healthcare applications, all the sensors are connected to Arduino UNO. Through this system, we can measure ECG, heartbeat, BP, and spo2. Through sensors, it is possible to measure all these values. Here all the sensors are powered using a solar power system. All these analog sensors can be connected to Arduino through any of the six analog pins. These values are then used for detecting any critical situation. In the case of a critical situation, an alert can be given as a message. Also, it is possible to monitor the person's health from any location in the world through the Thingspeak cloud. Data from sensors is uploaded to the Thingspeak periodically without any interruption if the internet is available. Here ESP8266 Wi-Fi module is used for connecting Arduino to the internet.

2. INTRODUCTION

Web of Things (IOT), suitable and related wellness care might be a fundamentally crucial one. Adjust the social occasion of rich actualities characteristic of our substantial and scholarly country. Caught on a non-prevent establishment, accumulated, and accurately profound mind, such records would rationale incredible transformative trade in the social services scene. In particular, the supply of realities at However, undreamed scales and fleeting longitudes notwithstanding an advanced day innovation of brilliant strategy calculations can:

a: facilitate a development inside the look at of medicine, from the present situated up fact analyze and address receptive worldview, to a proactive structure for exami of ailments at an early degree, further to obstruction, cure, and ordinary control of wellness in region of unwellness,

b: adjust Personalization of cure and control picks concentrated essentially to the appropriate events and wants of the individual, and

c: encourage reduce decline lower back the rate of wellness care in the meantime as on a similar time up results. For, the length of this paper, we tend to concentrate on the chances and difficulties for IoT in understanding this inventive and insightful of a long time of social insurance. Ongoing years have seen a creating enthusiasm for wearable sensors and nowadays numerous gadgets place unit financially in the commercial center for non-general human services, well being, and leisure activity ubiquity.

Furthermore, to the zone of leisure activity happiness wellness region took into account by means of present day-day gadgets, specialists have conjointly idea around projects of such innovation in restorative applications in remote looking frameworks for long time recording, control and clinical get right to get section to influenced man or lady's physiological data, bolstered current mechanical propensities, one will immediately recall a period inside the close predetermination as fast as your normal substantial test is gone before through way of a two to a couple of day measure of relentless physiological looking through abuse modest wearable sensors.

Over this c program language period, the sensors would perhaps without quit archive signs correlative on the whole with you along with component your key physiological parameters and hand-off the resulting records to a data related along the edge of your wellness measurements.

When you appear for your substantial test, the clinical well being expert must be had in the commercial center not just typical wellbeing office/lab-check essentially based completely static estimations of your physiological and metabolic use. anyway conjointly the various more

extravagant longitudinal document gave the helpful asset of the sensors.

Abuse the inside the commercial center comprehension, and helped through the utilization of decision valuable asset structures that during reality have get legitimate of passage to an outsized corpus of perception understanding for probability individuals, the restorative specialist will make a greatly improved investigation for your well being and propose cure, early intercession, and lifestyle decisions that region unit significantly successful in up the typical of your wellness.

Such a unique age additionally can Transformative affect global consideration frameworks and extensively lessen care costs and embellish pace and precision for findings.

2.1 LITERATURE SURVEY:

The wellbeing tracker 2000, that could video show contraptions buyer's fundamental signs and signs, and manifestations, and signs by and large with coronary. Coronary pulse or heartbeat, circulatory strain, and respiratory charge can be finished the utilization of weight sensors.

The secured influenced man or lady following joining with virtual influenced character's information, the essential exasperating conditions to developing heartiness of "e-wellness" application to a degree at which clinically helpful. The threats of computerized influenced character record are remarkably time ingesting and expensive to defeat this problem, utilizing curiosity discovery mission that licenses to apply a legitimate away examination without covered, automatics procedures.

The goal is to uncover how radio recurrence personality, multi-specialist, and web of components advancements can be utilized to brighten people get appropriate of access to outstanding and shoddy human services contributions to reduce logical blunders, finish influenced singular security and to advance the medicinal services methods.

The current enormous organization of cell phones, workstations, Wi-Fi, Bluetooth, Personal computerized collaborators (PDAs) and radio recur-

rence distinguishing proof (RFID) innovation infiltrate the medicinal services environment.

Crucial records costs and the measure of the insights collection in a development of cunning wellness care use cases are talked about. At long last, they advanced fix type wearable fundamental GPS beacon that numerous quantities of basic sensors, unbalanced customary average generally execution processor and a twin mode Bluetooth handset is incorporated, the microcontroller based absolutely completely non-counteract non-intrusive sleeve parcels less blood strain length gadget with an alert circuit for wellness care checking apparatus. The exactness of a framework is resolved in acknowledgment run with the valuable helpful asset of contrasting the results and the triumphing conventional frameworks.

On the off chance that the BP perusing, coronary heart charge or body temperature surpasses a similar vintage assortment for any influenced man or lady, the gadget can tell utilizing a disturbing circuit. The total gadget is overseen through microcontroller ATMEGA8L.

The basic gadget is solid, right, transportable, remember for all intents and purposes extremely worth, buyer quality and most powerful.

Existing System:

- Diagnosing with the help of a doctor
- Conventional devices that can only measure a particular parameter
- Devices that have to be connected invasively to get measurements
- No automated system exists
- Smart watches are expensive and not specifically for healthcare

Proposed System

- In this system for 24x7 human health monitoring is designed and implemented
- In this system, the Arduino Uno board is used for collecting and processing all data
- Wireless devices have invaded the medical area with a wide range of capability.

- To monitor the patient details in periodic interval is on overhead using existing technologies.
- To overcome this we have changed recent wireless sensor technologies.
- Added advanced sensors like pulse oximeter for measuring blood pressure
- Different sensors are used for measuring different parameters
- All this data is uploaded to thingspeak for remote analysis



3 BLOCK DIAGRAM

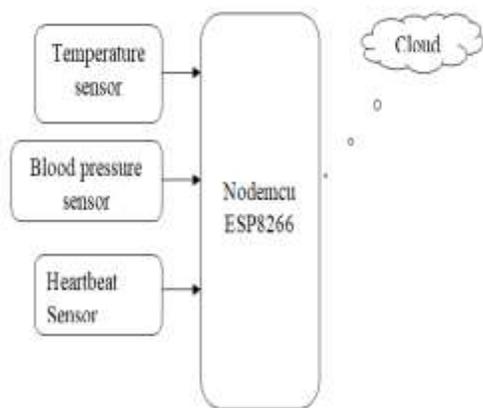


Fig3.1. Block diagram of proposed system

The figure below shows the block diagram of the entire system to be developed where each module is being discussed in the earlier chapters. The system entirely collects the patient's data which can be stored in a web server or data base of the doctor. The live values of the patient are 24 monitored time to time so that whenever there are abnormal conditions an SMS will be sent or displays on screen from anywhere in the world.

4 HARDWARE COMPONENTS

.NodeMCU is an open source LUA based firmware developed for ESP8266 wifi chip. By exploring functionality with ESP8266 chip, NodeMCU firmware comes with ESP8266 Development board/kit i.e. NodeMCU Development board.

Since NodeMCU is open source platform, their hardware design is open for edit/modify/build.

NodeMCU Dev Kit/board consist of ESP8266 wifi enabled chip. The **ESP8266** is a low-cost Wi-Fi chip developed by Espressif Systems with TCP/IP protocol. For more information about ESP8266, you can refer ESP8266 WiFi Module

There is Version2 (V2) available for NodeMCU Dev Kit i.e. **NodeMCU Development Board v1.0 (Version2)**, which usually comes in black colored PCB.

NodeMCU Dev Kit has **Arduino like** Analog (i.e. A0) and Digital (D0-D8) pins on its board.

It supports serial communication protocols i.e. UART, SPI, I2C etc.

Using such serial protocols we can connect it with serial devices like I2C enabled LCD display, Magnetometer HMC5883, MPU-6050 Gyro meter + Accelerometer, RTC chips, GPS modules, touch screen displays, SD cards etc.

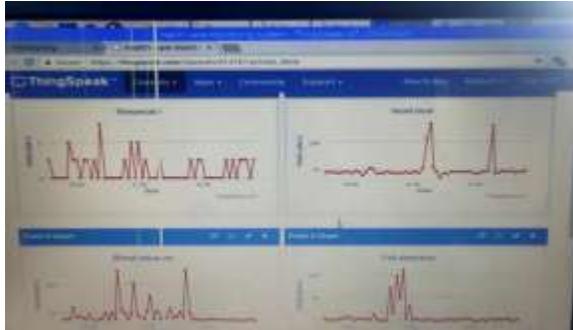
How to start with NodeMCU?

NodeMCU Development board is featured with wifi capability, analog pin, digital pins and serial communication protocols.

To get start with using NodeMCU for IoT applications first we need to know about how to write/download NodeMCU firmware in NodeMCU Development Boards. And before that where this NodeMCU firmware will get as per our requirement.

cutting off the blood flow with the pressure exerted by the cuff.

RESULT



7 CONCLUSION

In this paper, we evaluated the current kingdom and covered future directions of far off wellness checking age. Wearable sensors, definitely the ones arranged with IOT insight, convey engaging options for Facilitative articulation and recording of ability in household and work of art situations, over for a ton longer lengths than square confirmation at present finished at authoritative focus and research center visits. This fortune trove of skill, as quick as broke down and offered to doctor in clean-to-acclimatize representations have the capacity for outstandingly up wellness care and diminishing charges. We have an inclination to feature a couple of the exasperating circumstances in detecting, investigation, and see a photo that requires to be tended to the progress of time than frameworks might be planned.

8 REFERENCES

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