

Smart Fitness Care System Implemented by using Internet of Things

S. Muthuselvan, S. Rajaparakash, Rajan Verma, Debasish Jena, Akshay Kumar

Abstract: The heart Diseases cause a large number of death overall as a result of the expansion in the maturing populace and the ascending of human services costs. There is likewise an interest of value medicinal services from remote areas. Technological advancements in the field of therapeutic gadgets and correspondence can help diminishing the expense of medicinal services. In this paper a constant coronary illness checking framework is presented. This paper depends on the observing of the patient that is finished by the specialist ceaselessly without really visiting the patient. IoT is turning into a noteworthy stage for some administrations and applications, likewise utilizing Raspberry Pi as a sensor hub as well as a controller here. Paper propose a conventional Health checking framework as a stage forward to the advancement made in this division till now. The pulse of the patient can be observed by the specialist or by the watchman without really visiting the patient. Contemplating this, we have built up a model for a wristband that is compact, wearable remote pulse checking gadget. Accordingly, specialists can give fast administrations from remote place or in the event that observed by the watchman, he can find a way to spare the patient's life promptly through the email or SMS notice that they get.

Index Terms: Health care, Internet of Things, Raspberry Pi, Heart Disease.

I. INTRODUCTION

Presently a day's medical issues like cardiovascular problem, lung disappointments and heart related diseases are emerging day by day at a high rate. Because of these issues time to time checking is extremely fundamental. A modern idea is health observing of a patient remotely. It is a noteworthy advancement in medical field. Health experts have built up a

splendid and cheap health checking framework or giving happier with living to the general population experiencing different sicknesses utilizing driving Advances like remote interchanges, wearable and versatile remote health checking gadget. As visits of specialists doctor to the patients continually are diminished as the data with respect to patient's health straightforwardly reaches to specialist's screen from anyplace the patient dwells. Additionally, in view of this specialists can spare numerous lives by conferring them a snappy and important administration. As per the ongoing insights, almost two million individuals experience the ill effects of heart assault each year and one individual kicks the bucket like clockwork in India. World Health Organization (WHO) reports that coronary illness rate may increment to 23.3% worldwide continuously 2030. The treatment of such endless malady requires persistent and long haul observing to have appropriate control on it. IOT moves from manual pulse checking frameworks to remote pulse checking frameworks A specialist may not be present all an opportunity to give prescription or treatment to the patients or a watchman may not be available all an opportunity to take the patient to the doctor's facility. Consequently, our proposed framework is the correct answer for this issue. The remote pulse observing framework is utilized to screen physical parameter like heart beat and send the deliberate pulse straightforwardly to a specialist through Email or SMS.

II. INTERNET OF THINGS IN HEALTH CARE

Medicinal medical gadgets have undergone intense changes, from the conventional detached gear to remotely reprogrammable gadgets. These progressions incorporate the development of therapeutic IoT frameworks that can even be associated with PDAs. [1] The restorative IoT is essentially a framework involving primarily wellbeing checking gadgets. Patients' wellbeing limitations are distantly recorded by a back-end Structure. A while later, the back-end framework examinations the recorded information and gives suitable criticism to the clinical staff. The input enables authorities to decide the present wellbeing circumstance of patients and promptly respond to basic cases [2]. A medicinal gadget can be utilized to screen wellbeing parameters. Elective gadgets, for example, a savvy or a cell phone, might be great substitutes progressing [3]. In the meantime, it ought to be mulled over that the dataset recorded by these gadgets is of most extreme significance as it involves the wellbeing records of patients. This framework is very helpful for medicinal services facilities, emergency clinics or outpatient centers.

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The therapeutic IoT framework is a modern setup that contains an assortment of components and frameworks, for example, restorative gear, brilliant sensors, arrange portals, distributed computing, huge information, clinical data frameworks, etc., that participate to control the human services condition. [1]

III. PROPOSED SYSTEM

In rural areas we can use this product for poor people where hospital facility is not available. In some hospital there is no instrument to measure heart beat in that place we can use this product. And main advantage in that product we can see our measurement in any mobile & computer sitting in anywhere. We can access this product on patient health by the help of remote controlling. Also we can measure room temperature by the help of this product. We all know that lots of people are suffering from heart problem and they have to measure heart beat while sitting at home. The product is very useful in today's world

IV. WORK FLOW FOR PROPOSED SYSTEM

The below figure 1 show the work flow for the proposed system of the health care system. The heart beat signals will be sensed and send it to the low pass filter and its amplifier. Then it will be used by the A/D converter. After, the conversion processed completed, it will be moved to Arduino Uno Board. The temperature sensor send the information about the temperature to Arduino Uno board. Using the HC-05 module, all the information will be sent to the proposed system, which is used to find the prediction with the help of the heart rate and body temperature.

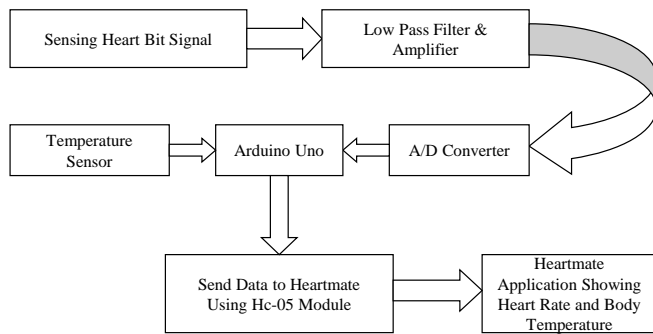


Fig. 1. Work flow for proposed Health Care System

V. SYSTEM SPECIFICATION

A. Software Requirements

The term "Arduino" isn't mostly used for both components. The hardware (Arduino Boards) and the corresponding software (Arduino).

The product that is utilized to program the microcontroller, is open-source-programming and can be downloaded for nothing on www.arduino.cc. With this "Arduino programming" you can compose little programs with the microcontroller ought to perform. This programs are called "Draw". At last the representations are exchanged to the microcontroller by USB link. More on that later regarding the

matter "programing".

B. Hardware Requirements

The following hardware components are used for implementing the proposed system.

- Arduino Uno
- Light Emitting Diode
- LCD Interface
- Bridge Rectifier
- Voltage Regulator
- Pulse Sensor
- Temperature Sensor
- Wi-Fi Module

VI. CIRCUIT DIAGRAM

The below figure 3 shows, the circuit diagram for the Smart Health Care System Implemented by Using Internet of Things. The different parts of the circuit diagram is Controller, LCD Interfacing and power supply. All these parts of the diagrams are very useful to this system.

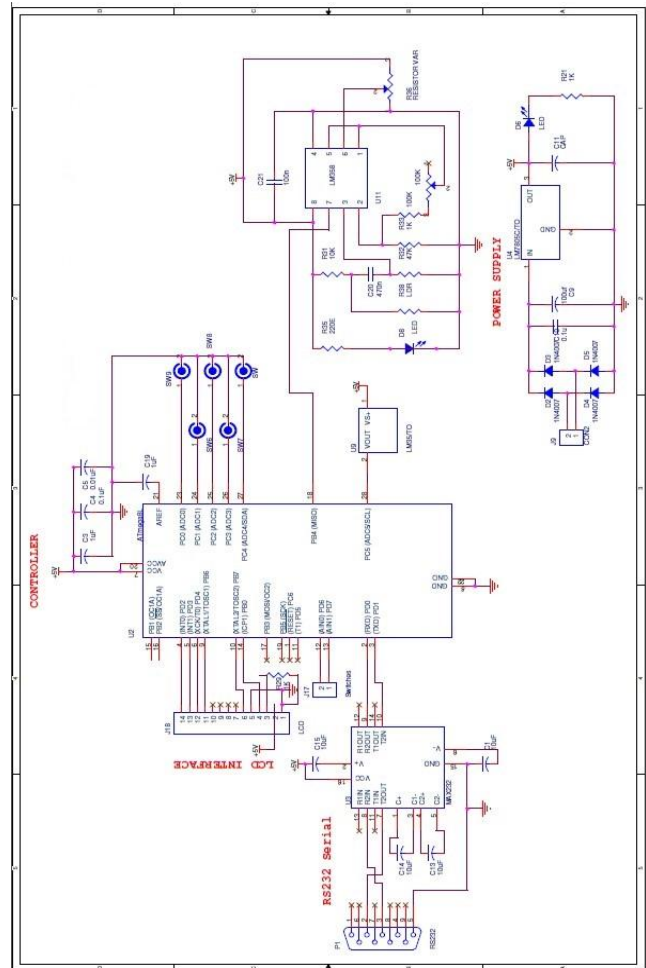


Fig. 2. Diagram for Circuit Diagram for overall system

In the above circuit diagram we used transformer for converting 220 voltage to 12 volt. Then the transformer is connect to the voltage regulator for converting 12 voltage to 5 volt. Then voltage regulator is connect to the bridge rectifier for converting dc volt.



Bridge Rectifier directly connect to the Arduino board for provide power supply to the Uno board. All the component are connected to the Arduino board. LCD are connect to the UNO board to display outputs. Wi-Fi module are also connected to the Arduino board for connecting the internet connection and giving output to the server. Pulse Sensor and Temperature Sensors are directly connect to the Arduino Board. Here one reset button is connect to the board for resetting the input of the users.

VII. IMPLEMENTATIONS

A. Coding

Presently we can begin appropriately. Without an excessive amount of hypothetical data we begin straightforwardly with programming. Learning by doing. On the left side you can discover the "outlines", on the privilege the going with clarification for the directions in dim. On the off chance that you work through the instructional exercises with this framework, you will before long comprehend the code and have the capacity to utilize it without anyone else's input. Later on you can acquaint yourself with different highlights. These instructional exercises are just implied as initial steps to the Arduino world.

B. Working Model

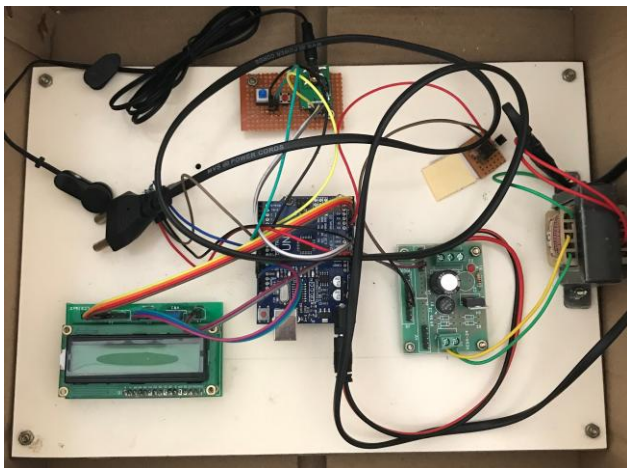


Fig. 3. Working model for overall system

The proposed intelligent health observing framework is being conveyed and tried over a patient whose individual subtleties are gone into the web-based interface.

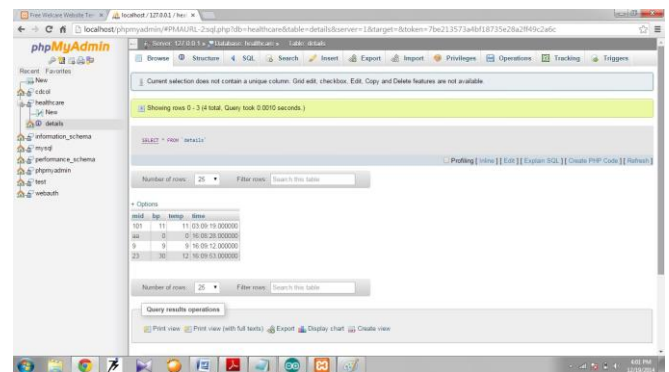
The patient is associated with IOT health checking framework which comprises of a pulse sensor and a temperature sensor. The live chart of the patient's pulse and temperature is being observed on a Xampp based database server. The IOT gadget utilized here is Arduino. The framework design of the proposed model is clarified by the given underneath figures which incorporates a server associated Arduino that transfers the information gotten by the sensors onto the database and factual charts are being plotted for further examination and recording.

In the Upload tab, the doctor can manually upload the blood pressure and the temperature of a patient with a specific machine id so as to maintain the records for future purposes.

mid	pmin	pmax	temp	time
m1	80	103	36	16:19:55.000000
m1	80	103	36	16:20:18.000000
m1	80	103	36	16:20:41.000000
m1	80	103	36	16:21:04.000000
m1	80	103	36	16:21:27.000000
m1	80	103	36	16:21:49.000000
m1	80	103	36	16:22:12.000000
m1	80	103	36	16:22:35.000000
m1	80	103	36	16:22:56.000000
m1	80	102	36	16:23:18.000000
m1	80	103	36	16:23:40.000000
m1	80	103	36	16:24:03.000000
m1	80	102	36	16:24:26.000000
m1	80	103	36	16:24:52.000000
m1	80	103	36	16:25:14.000000
m1	80	103	36	16:25:36.000000
m1	80	103	36	16:25:59.000000
m1	80	102	36	16:26:20.000000
m1	80	103	36	16:26:42.000000
m1	80	103	36	16:27:04.000000
m1	80	102	36	16:27:27.000000

Fig. 4. Data Samples

The information from different sensors are being transferred into the database server from which the information is additionally used to plot charts and break down the wellbeing reports. [4]



This figure demonstrates the full structure of the database which is being facilitated at present on the neighborhood host and further can be associated with the entire world by means of IOT. The database has full subtleties and record history of every single patient through which a measurable diagram is plotted continuously which is utilized for patient's further investigation and following. The model is at last conveyed over a typical fit individual and her pulse and temperature subtleties are plotted on an ongoing chart. A precedent yield of a proposed wellbeing screen gadget is appeared in which the patients individual subtleties are appeared and the proposed model can likewise be conveyed as a versatile application so the model turns out to be more portable and simple to get to anyplace over the globe.

VIII. CONCLUSION

The objective of this suggested system is to deliver improved and proficient fitness facilities to the patients by applying a networked data in cloud.



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To providing the efficient and fast solution of the treatment can be given to the patient with the help of the data which is stored in the cloud environment. The well-equipped end model will be used to the doctor to examine their patents anytime and anywhere in the global. The proposed system contain the feature to send the mail or message to the doctor about the current status and all details about medical data of the patient for the scenario of emergency. This system can be deployed as a mobile application, so it will become very easy to access throughout the globe and it will get more mobility over the world.



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REFERENCES

1. Fayeze Hussain Alqahtani, "International Journal of Computer Applications" (0975 – 8887) Volume 180 – No.18, February 2018.
2. D. Miorandi, S. Sicari, F. De Pellegrini, and I. Chlamtac, "Internet of Things: vision, applications and research challenges," Ad Hoc Networks, vol. 10, pp. 1497–1516, September 2012.
3. P. A. Williams and A. J. Woodward, "Cybersecurity vulnerabilities in medical devices: a complex environment and multifaceted problem," Medical Devices (Auckland), vol. 8, pp. 305–316, July 2015.
4. Punit Gupta, Deepika Agrawal, Jasmeet Chhabra, and Pulkit Kumar Dhir, "2016 International Conference on Computational Techniques in Information and Communication Technologies (ICCTICT)", 978-1-5090-0082-1/16

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