



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Heart Monitoring System

Nikhata Fatma Mumtaz Husain Shaikh¹ Deepali Wagh² Amir Sarguroh³

^{1,2,3}Department of Information Technology Engineering

K.C.College of Engineering & Management Studies and Research, Thane(E). Maharashtra, India

Abstract— Normally great number of lives are affected because the patients are not right and within the law worked. In the same way, for constant parameter qualities are not through being able to keep producing measured in building and in addition in medicinal buildings." At times it gets to be troublesome for medicinal centres to as often as possible check patients' conditions. Likewise, constant checking of ICU patients is impractical. To manage these sorts of circumstances, our framework is beneficial. the most purpose of this undertaking is to style and instrument the true time state of being a healthy watching system using raspberry pi. Here we are getting to work that we'll regularly monitor the patient health and also, we'll maintain the update of the patient health. during this, we project used a heartbeat sensor to ascertain the patient health. Here we will calculate the readings of pulse, systolic, diastolic values. we will store the previous value of these terms. this may help us to match the health status of the patient. And easier thanks to recommending proper medicine.

Keywords: Raspberry Pi, Arduino, Systolic, Diastolic, Heartbeat Sensor, Bluetooth, HDMI Cable, HD TV, Arduino Nano, Raspbian, Python.

I. INTRODUCTION

The big competitive world and new technologies are introduced new ways towards technology and automation. These technologies are also enhancing the human health care systems.[1] The people are busy in their day-to-day work in job or business, so they want to ensure safety and care about their health or their loved ones does matter in daily life.[2] Due to a busy lifestyle or heavy workload, people don't have time to take care of their health. So that the health issues increasing day by. And the major disease reached on the top. No one has that much time to take care of their health or not for their relatives or family members. Can we get the middle way that will help us to take care of our health and need not spend access time for it?[3] In this project, we plan the Health Monitoring System Using Raspberry Pi and Arduino?

In this Raspberry Pi and Arduino is the main controller. Also, Bluetooth technology, Heart bit sensor are important parts. In this project, two main parts will be there of a complete system that is transmitter and receiver.[6] The transmitter will be with the patient and the receiver will be with the doctor who far away from the patient. Here the heart bit sensor gives the instant readings of systolic, diastolic, and pulse rate of the patient to the raspberry pi, and then raspberry pi sends it to the Arduino. By this system, the patient will be under observation of the doctors even if doctors are not present in the patient's place.[4]

II. PROBLEM DEFINITION

This project has been built with the objective to manage the health concerned issue systems cost-effectively. In Health Monitoring system with embedded computing can extract information from readings on a heartbeat sensor without being with the patient unit. That's why for my project I'm using raspberry pi as a receiver and Arduino as a transmitter. Both the systems needn't be on the brink of one another. That's the advantage of my project. Here the patient is often under observation for 24 hours albeit the doctor or relatives of the patient are distant from him.[5]

III. RELATED WORK

Healthcare of Human we work on Health Monitoring System Using Raspberry Pi and Arduino. In our project, the people are busy in their day-to-day add job or business, so that they want to make sure safety and care about their health or their loved ones does matter in lifestyle.

Due to a busy lifestyle or heavy workload, people don't have time to require care of their health. So that the health issues increasing day by day. And therefore, the major disease reached the highest. Nobody has that much time to require care of their health or not for his or her relatives or relations. Can we get the centre way which will help us to require care of our health and wish to not spend time interval for it?

Health Monitoring System within the system the most Application is their TELEGRAM we are using Telegram for the communication between patient and Doctor. We've created a GUI (Graphical User Interface) within we mention all the detail of each patient that we are connected with it.

At any time, human is there anywhere then also our device is activated with a human if the health is in check, then immediately the patient, all detail and its pulse, systolic and Diastolic rate detail is going to be sent to Doctor through the Telegram.

The propose model is well equipped system where the doctor can check his patient anywhere, anytime. Emergency Message will be sent through Telegram application to the Doctor, and the doctor will check that patient details (Systolic Pressure, Diastolic Pressure, and Pulse Rate) and give him proper medics.

All the detail from the user GUI through the Telegram it sent to Doctor from this may realize attack, etc. The human will know that thing early and he/she will take proper precautions on time.

From this, we'll save human health and save time because time is that the most vital thing in our life.

IV. PROPOSED SYSTEM

The system of patient health monitoring is often mostly utilized in emergency time because it is often daily monitored, recorded, and stored as a database. In the future, the IoT device is often combined with cloud computing

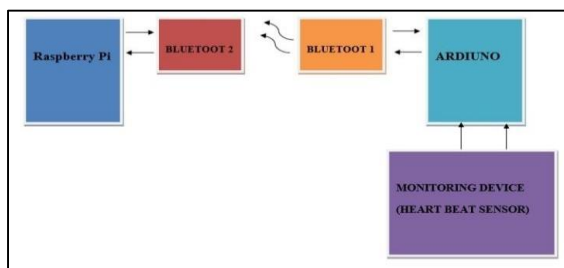


Fig. 1: Block Diagram

In this proposed work the vital parameters like systolic, diastolic, and pulse readings are monitored using Arduino Nano. These sensor signals are sent to Raspberry pi from Arduino via Bluetooth; therefore, the Arduino Nano is employed as a transmitter, and Raspberry pi used as a receiver. Here patient's systolic, diastolic, and pulse are measured using respective sensors and it is often monitored within the screen of the computer using Arduino Uno. The proposed method of Health monitoring system monitors patient's health parameters using Arduino Uno. Hence, it's continuous monitoring of the patient's health by the doctor. Any abrupt increase or decrease in these parameter values are often detected at the earliest and hence necessary medications are often implemented by the doctor immediately

A. Raspberry pi:

This is Raspberry Pi 2 Model B is 6 times greater processing work than previous models. This is second generation Raspberry Pi model. The Raspberry pi is a small system that is designed on a single board with all the necessary components required for working on an operating system. The board has a micro-USB port that can be used to supply 5V DC using an adapter with a rating not less than 1A. The board can connect by using a USB port but it does not do that.



Fig. 2: Raspberry Pi 2 Model B

It will be connected to the HD TV by using an HDMI cable. It is a video input port during a raspberry pi board which may even be used for connecting an external camera. The board also can be connected to the PC monitor employing an HDMI to VGA adapter cable. The Raspberry pi board features a Dual RCA (PAL and NTSC) output which enables them to be connected on to CRT TV screens and

so that the database is often shared altogether with the hospitals for medical care and treatment.[6]The system of patient health monitoring is often mostly utilized in emergency time because it is often daily monitored, recorded, and stored as a database. In the future, IoT devices are often combined with cloud computing so that the database is often shared altogether with the hospitals for medical care and treatment.

audio output is additionally available. The board has two USB2 ports where the keyboard and mouse are often plugged in. there's an Ethernet

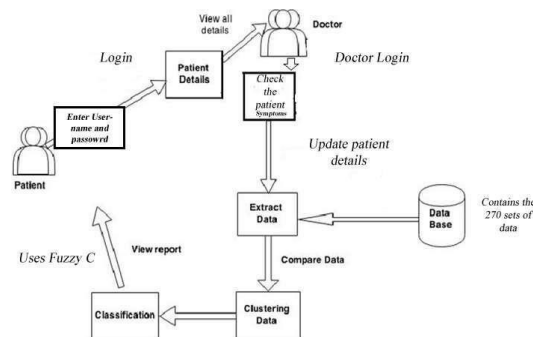


Fig.2:Architecture of System

board to a network. The Raspberry pi is meant else from the SD card and therefore the board also has an SD card slot. The device using an upgraded Broad com BCM2836controller chip which is an SoC (System on Chip). This controller has all the peripherals like timers, interrupt controller, GPIO, USB, PCM / I2S, DMA controller, I2C master, I2C / SPI slave, SPI0, SPI1, SPI2, PWM, UART0, and UART1. The SoC is a powerful ARM11 processor and it runs on 700 MHz at its core. The controller has Video Core, MPEG-2, and MPEG-4 and this is having a graphical processing unit (GPU). It also has a 512 MB SDRAM. In the Raspberry pi board, it should also install the operating system version of Windows, Mac, and Linux.

- 1] With the datasets already acquired from the UCI Machine learning repository, we can now proceed with collecting the details of the patients.
- 2] Data like the patient's name, Blood group, Address, Phone number, sex, weight, Height are collected from the patients themselves to help with the creation of an individual user account.
- 3] Already registered users can directly start accessing the system with the help of the user id and password provided.

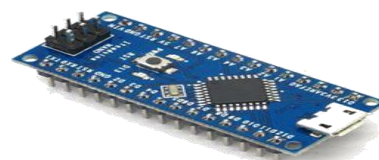


Fig. 3: Arduino Nano

B. Arduino Nano:

Arduino is open-source hardware. The hardware context designs are presented under an ingenious Commons Attribution-Share-Alike 2.5 license and are available on the Arduino website. Of the hardware, it's also available Layout and production files for a few versions. Hardware

and software designs are freely available, But the developer is telling that the Arduino is vital and its special product so anyone shouldn't use it without any permission. The official policy document on the use of the Arduino name emphasizes that the project is hospitable get-together work by others into the official product. The project name by using various names ending in Arduino Several Arduino compatible products commercially released have avoided it.

C. Heartbeat sensor:

The pressure of the blood in the arteries as it is pumped around the body by the heart is known as blood pressure. When your heart beats, then it will supply the blood through the arteries to all the parts of the user body. This force creates pressure on the arteries. The systolic pressure (as the heart beats) over the diastolic pressure (as the heart relaxes between beats) is the 2 number of Blood pressure which as recorded. The unit which measures this is called a Sphygmomanometer. If you have high blood pressure then it is important to do monitoring blood pressure at home and it is important for many peoples. At every time the blood pressure, not be stay the same. It changes to meet your body's needs. It is affected by various factors of the body like position, breathing or emotional state, exercise and sleep. When you are relaxed and sitting or lying down then it is the best time to measure blood pressure.



Fig. 4 Bluetooth Sensor

D. Bluetooth module:

The HC-05 Bluetooth Module and it are often Master or Slave configuration, making it an excellent solution for wireless communication. Simply it is often used for an interface replacement to determine the connection between MCU and GPS, PC to your embedded project, etc.

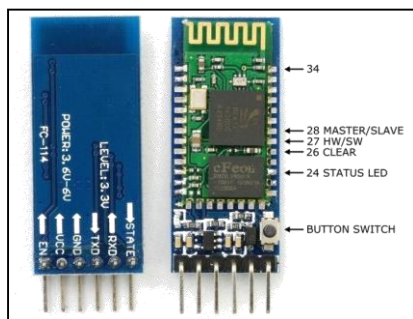


Fig. 5: HC-05 Bluetooth

The HC-05 Bluetooth Module has 6 pins are as follows: Vic, GND, TX, RX, Key, and LED. It the pre-programmed as a slave, so if you want to connect the Key pin then you need to change it to Master Mode. The difference between Master and Slave modes is that in Slave mode the Bluetooth module cannot start a connection, in Master mode, it

can anyhow accept incoming connections. After the connection starts the Bluetooth module can send and receive data indifferent of the mode it is running in. In the Slave mode, if you are using a phone to connect the Bluetooth module then easily it will be used. The normal data transmission rate is 9600kbps. The range for Bluetooth communication is between 30m.

1) Features

Protocol: Bluetooth Specification v2.0+EDR
 Frequency: 2.4GHz ISM b-and
 Modulation: GFSK
 Speed: Asynchronous: 2.1Mbps (Max) / 160 kbps,
 Synchronous: 1Mbps/1Mbps
 Security: Authentication and encryption
 Profiles: Bluetooth serial port
 Power supply: +3.3VDC 50mA

V. CONCLUSION

A healthcare monitoring system using Raspberry Pi and Arduino using a mobile device (Telegram) and sensors are often implemented during a global network with the assistance of Arduino and Raspberry Pi. The devices share information with doctors through Telegram, making it possible to gather and monitor data more accurately. Our sensor is often used for monitoring the patient and providing the services during a proper time. The proposed system is often enhanced and extended by using other invasive also as non-invasive sensors for selecting up essential medical potentials of a patient. this will be further analysed, stored, and transferred on a worldwide platform. this may help to show results parallelly so that simple connection and time-saving are often facilitated. The proposed system gives better and effective healthcare service to patients. The proposed model is a well-equipped system where the doctor can check his patient anywhere, anytime. Emergency Messages are going to be sent through Telegram application to the Doctor, and therefore the doctor will make sure patient details (Systolic Pressure, blood pressure, and Pulse Rate) and provides him proper medics.

REFERENCES

- [1] Towards efficient Automatic Scaling and Adaptive cost-optimized e-Health services, Elie Rachid, El Hadid Cherkaoui, Mustapha Ait-idir, Nazim Agoulmine, Nada Cheneb Taher, Marcelo Santos, Stenio Fernandes, 2015 IEEE Global Communications Conference (GLOBECOM)
- [2] M. Jordanova, F. Lievens, "Global Telemedicine and eHealth", e-Health and Bioengineering Conference, 2011.
- [3] Matt Richardson & Shawn Wallace, "Getting Started with Raspberry Pi", 2nd Edition, Shroff Publishers & Distributors Pvt. Ltd., 2014.
- [4] Simon Monk, "Raspberry Pi Cookbook", Shroff Publishers & Distributors Pvt. Ltd., 2015.
- [5] Massimo Banzi & Michael Shiloh, "Getting Started with Arduino", 3rd Edition, Shroff Publishers & Distributors Pvt. Ltd., 2015.
- [6] B. SobhanBabu, K. Srikanth, T. Ramanjaneyulu, I. Lakshmi Narayana, "IoT for Healthcare", International Journal of Science and Research, Vol.5, Issue 2, February 2016.
- [7] Sreekanth K U, Nitha K P, "A Study on Health Care in the Internet of Things", International Journal on Recent and Innovation Trends in Computing and Communication, Vol.4, Issue 2, February 2016.
- [8] Palaniappan, S., Awang, R., 2008. Intelligent heart condition prediction system using data processing techniques. International Journal of Computing and Network Security 8, 108–115.
- [9] "Intelligent and Effective attack Prediction System Using data processing and Artificial Neural Network". European Journal of research project Vol. 31, No. 04, 2009, 642-656.
- [10] Carola's Ordonez "Association Rule Discovery with the Train and Test Approach for heart condition Prediction" IEEE Transactions on Information Technology in Biomedicine, Vol. 10, No. 2, April 2006.
- [11] . Massimo Banzi & Michael Shiloh, "Getting Started with Arduino", 3rd Edition, Shroff Publishers & Distributors Pvt. Ltd., 2015
- [12] Simon Monk, "Raspberry Pi Cookbook", Shroff Publishers & Distributors Pvt. Ltd., 2015.
- [13] Matt Richardson & Shawn Wallace, "Getting Started with Raspberry Pi", 2nd Edition, Shroff Publishers & Distributors Pvt. Ltd., 2014.
- [14] M. Jordanova, F. Lievens, "Global Telemedicine and e-Health", e-Health and Bioengineering Conference, 2011.
- [15] Towards efficient Automatic Scaling and Adaptive cost-optimized e-Health services, Elie Rachkidi, El Hadi Cherkaoui, Mustapha Ait-idir, Nazim Agoulmine, Nada Cheneb Taher, Marcelo Santos, Stenio Fernandes, 2015 IEEE Global Communications Conference (GLOBECOM)

