

HEALTH MONITORING CHAIR

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ABSTRACT

ATmega328p in healthcare is notable in providing the better medical facilities to patients, doctors and hospitals as well. The aim of this paper is to provide system for monitoring the patients using sensors and ATmega328p and ESP8266. Handling different patients in short period of time by doctors at similar time, to seek advice from the doctors frequently these can create big trouble and waste of energy and time. This project will help elderly people, office employees to monitor their physiological parameters such as temperature, pulse rate, electrocardiogram, oxygen saturation. After sensing the data from these parameter they will be stored in the cloud and sent to specific device through WI-FI module so that patient can view the earlier result. Healthcare monitoring is a key to enhance the lifestyle in rural region. The snapshot of result along with corresponding text file can be sent as an SMS, Email or MMS to a Doctor to get a quick feedback. The collected information can be useful to analyze and predict chronic disorders or any other disease such as heart attack in primary stage itself using the data mining techniques that will also provide the approach advantages for the decision making. The smart chair sent an SMS with all health details to doctors phone in case any emergency. This will very helpful for the people in rural areas. The cost was kept minimal during the design of the project. The main focus of the project will be useful and easily affordable for the people of developing nations.

INTRODUCTION

Healthcare is one of the recent trends to provide better health caring facilities not only in hospitals but also the personal health caring facilities. Having a smart system of various parameters can consume power, cost and efficiency. This paper is reviewed according to smart

system. Scientists are trying in the medical field of innovation and research since many decades to enhance the lifestyle.

Real-time healthcare monitoring provides enhancement of life care for the fast growing population in rural areas as well as urban areas. This project will reduce the cost for rural people and enhance the lifestyle of senior citizens. The project will help to identify the problem in the beginning stage, it will help to cure problem. In earlier years wireless technology has increasing the need of upholding various sectors. In traditional methods doctor plays an important role in health checkup, for this process it requires a lot of energy, also its time consuming to get the reports. Now in recent years technology is improving as per the need of various sectors. Biomedical is one of the recent trends to provide better health care. The sensor will record signal in continuous manner and then they co-relate with essential physiological parameter and communicate over Wi-Fi now. The resultant data will be stored and displayed. The pulse rate, respiration rate this kind of parameters are used to diagnose the diseases. The project will give electrocardiogram, pulse rate, temperature values using ATmega328p and ESP8266.

JUSTIFICATION RESEARCH

Firstly, in this research we are connecting sensor for human to provide medical facilities, LM35 to measure body Temperature. Secondly pulse oximeter to measure oxygen saturation and pulse rate. Third parameter is Electrocardiogram records the electrical signal from heart.

PROPOSED APPROACH

This paper aim to detect four main parameters electrocardiogram, pulse rate, temperature, oxygen saturation level. Due to the current pandemic situation that is increasing corona patients it is very risky and unsafe for people even visit the doctors thus this smart chair can do regular checkup at home itself. So our project will be very helpful for people.

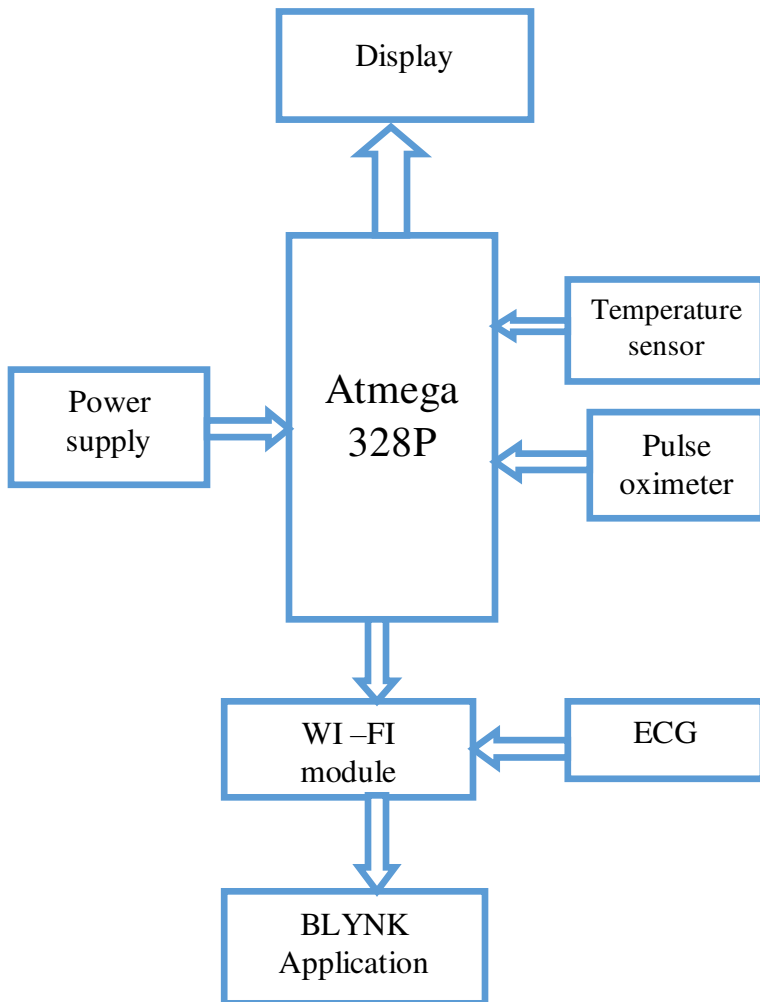


Fig (1) Block diagram



Fig (2)

2. ESP8266-01- The ESP8266-01 is a WI-FI based micro controller and controlled via ICP/TP protocol with 9 GPIO Pins. The ESP8266 ESP01 is shown in fig (3)



Fig (3)

3. Temperature sensor-The LM35 sensor is used for measurement of body - temperature. Sensor is put in contact with body and it senses temperature.it is calibrated linearly in Celsius It has low self -heating capability.The LM35 as shown in fig (4)



Fig (4)

4. PulseOximeter- The MAX30100 is an integrated pulse oximeter and heart rate monitor sensor solution. It combines two LED's, a photo detector, low noise signal processing to detect pulse oximeter and heart-rate signal. The MAX30100 as shown in fig (5)

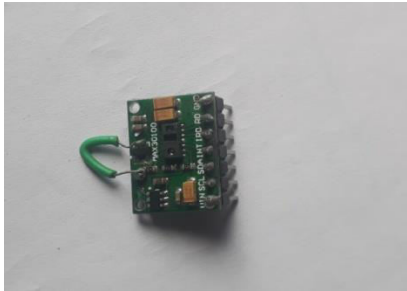


Fig (5)

5. ECG-The AD8232 ECG module integrated with AD8232 IC from analog devices, which is single chip design to extract, Amplify and filter bio potential signals for bio potential measurement Application. ECG can be extremely noisy so that AD8232 single lead Heart-rate monitor acts as an op-amp to help obtain a clear signal from the PR and QT intervals easily. It is a fully integrated single lead ECG front end. The fast restore feature improves Filter settling. The AD8232 as shown in fig (6)



Fig (6)

6. BLYNK Application- Use this Platform with iOS and Android apps to control Arduino over the Internet. You can configure Real-Time data.



Fig (7)

7. LCD- The Liquid Crystal Display used to display the Real-time data. The operating voltage is 4.7V to 5.3V. Alpha numeric LCD display module, it consists of two rows and each row can print 16 characters, it can work on both 8-bit and 4-bit mode. The LCD is shown in fig (8)

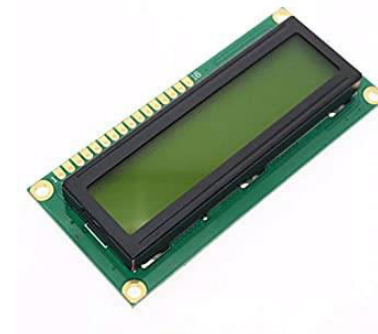


Fig (8)

POWER SUPPLY

The circuit needs two different voltages 5 volts and 3.3 volt for sensors and system controllers. The power supply, unsung hero of every electronic circuit, plays very important role in smooth running of the connected circuit. The main object of 'power supply' is as the name itself implies, to deliver the required amount of stabilized and pure power to the circuit.

SOFTWARE DESCRIPTION

In this paper we have made use of ATmega328 and ESP8266 Controller. Programming is done in Python language. After compiling the program, the program is downloaded onto the microcontroller.

APPLICATIONS- This project will help for office employee, elderly people or in rural areas for everyone. In case of emergency when it is difficult to reach to doctor this project will be very helpful. Now days in pandemic situation this project will play major role in everyone's life.

ADVANTAGES

1. Furniture with different sensors can help monitor health.
2. The cost of the system will be less.
3. The doctor can give a feedback by after viewing the logged results.

DISADVANTAGES

The only thing is clear about in any emergency case - doctor's feedback is necessary for safety. Communication between patient and doctor is necessary.

FUTURE SCOPE

1. Using the sensors on the chair in case of emergency it will great help for the patients.
2. Featuring smart chair will be useful for the medical facilities anywhere.

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