

Modern Pulse Rate Monitoring and Indicating Wearable Device based on IOT Platform

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ABSTRACT

A pulse monitoring is a device using to identify human heart health and related operations. A pulse is an wave or sound produced during contraction and expansion of heart which itself explains the blood flow throughout the body. Intensive monitoring is required for Doctors or clinical observers for maintaining a human fitness. Due to lack of Physical attendance of health officer there are chances of human error of lack of observation. IOT platform enables to remotely acquire data at any instant.

KEY WORDS: IOT (Internet of Things), Remote access

I. INTRODUCTION

In the present scenario, Fitness and healthcare are most concerned due change in lifestyle. We all are familiar to Pandemic crises , COVID-19. Therefore such crises often leads to observatory role in hospitals, parameters such as heart beat, Oxygen level and body temperature are to be controlled. Lack of hospital facilities and Beds, Home care units need to be installed, therefore these wearable and portable devices plays an important role for remote observations and access to the Doctor as well as to the sufferer. IOT itself uses internet for data transfer , which enables fast and remote control from any location in the world. A wide network enhances the data access, storage and analyzing using portable phone, laptops and other handheld devices via software and apps.

II. LITERATURE SURVEY

In spite of internet on mobiles and laptops, Internet is available on Smart Car dashboard, Smart Television, Alpha Numeric Display, Smart Home devices like Google 'Alexa' with audio controls. Wearable devices includes various elements firstly a microcontroller Node MCU, Temperature sensor and pulse reader with embedded program. The Microcontroller is programmed with associate degree rule to run the projected pulse tally system and transfer the information to Internet from wherever the info are often monitored from any device as well as alert system like short message service.¹

But, in Internet of things setting, generally an oversized variety of wireless devices area unit deployed in slender and widespread space like hospital, middle and terminal. This High density of readying will

vital degradation because of interference among adjacent devices This performance degradation development are frequently outlined as concurrence problem.²

Previously this system also being used for green house control but with a huge system installation cost, and separate connectivity servers. Medical field requires a rapid, compact and low cost device for such monitoring accompanying with high accuracy and repeatability.

III. METHODOLOGY

The whole system is complied with various sensors and programs such as sensors, network, domain etc. The principle used to make this protocol work is such that the hemoglobin has unique property of transferring oxygen whereas it doesn't utilize oxygen hence the porosity of hemoglobin absorbs light. The Infrared light has high intensity which can penetrate through skin layers.

In this project, various light emitting sensors can be used , here we are using pulse rate detector SEN-11574 sensor for transmitting light as well as detection. The another parameter is temperature which should be controlled at 37°C (98.6°F). The sensor should compile of the properties such as linearity, accuracy, repeatability and noise cancellation. Here we used temperature sensor LM35.

A microcontroller Node MCU accompanied with ESP8266EX is used for detection analyzing and processing data loaded with Embedded program.

IV. COMPONENTS USED

1) Pulse rate sensor:

The output of the pulse rate sensor is in digital form. The light emitted through IR LED is penetrated through skin, the light is absorbed by the blood and remaining amount is reflected to receiver i.e. LDR (Light Dependant Resistor). Hence the light is calculated in terms of voltage variations.



Figure 1: SEN11574

Technically this device has a scope of further development like GPS, Car Control, Voice control of appliances, Machine control which is far enough to the next generation to focus on. This device is a stepping stone for the Era of IOT. People desiring for statistically representation of their health could use such devices. Thus the vital point is the cost which is suppressed using simple electronic components.

V. CONCLUSION

In pandemic crises, Doctors have to monitor many victims and their various parameters at a time which is quite difficult in form of physical presence. Acquiring every patient's data at one place, which ultimately can provide accurate treatment and attention toward every patient which can save life. Overcoming conventional devices like biometric equipments like thermometer and sphygmomanometer. Viral diseases can be controlled due to isolation and remote access. Ease of operation helps every individual to use this device by itself.

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REFERENCES

- [1] Mamun AL, Ahmed N, AL Qahtani "A microcontroller primarily based automatic pulse numeration system from fingertip"(JATIT) Journal OF Theory and Applied technology ISSN 1992-8645.
- [2] BoemSeok Kim "A Distributed being mitigation theme of IoT-Based good Medical Systems", Inf method Syst Vol thirteen No sixteen ,pp 1602-1612.
- [3] Sudhindra F, Anna Rao S.J, 'A GSM Enabled Real time simulated pulse observation and management system' (IJRET) International Journal of analysis In Engineering And Technology, e ISSN 2319-3163.
- [4] Varun Goel, Sharad Srivastava, Dharmendra Pandit, Dharendra Tripathi, Pankaj Goel "Heart Rate observation System mistreatment Finger Tip through IOT" International analysis Journal of Engineering and Technology(IRJET)
- [5] J. Jin, J. Gubbi, S. Marusic, and M. Palaniswami, "An data framework for making a wise town through Internet of Things," IEEE Internet of Things Journal, vol.1, pp.112-121, 2014.
- [6] Kaleem Ullah, Munam Ali sovereign, Sijing Zhang. "Effective ways in which to Use Internet of Things within the Field of Medical and good Health Care".