

# IoT BASED REMOTE HEALTH MONITORING USING LabVIEW

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**Abstract** – Healthcare is given the major importance now a-days in all the countries with the advent of the chronic diseases. This work provides better solution for remote health monitoring with affordable cost using latest technologies. IoT is the fast-growing technology in every sector. With the integration of IoT and sensors healthcare monitoring can be brought to such a pace. Sensor readout are carried out using LabVIEW; a virtual instrumentation software. The results will be copied in the IoT server and then it will be analyzed. If it is in normal condition the report will be forwarded to the patient or if it is critical the results will be sent to the healthcare immediately, also ambulance can be called automatically without human intervention, if necessary. This ensures that proper treatment is provided to the patient at the early stage. The health will be monitored continuously and properly diagnosed of the state of patient health. It reduces the complexity, the cost, the waiting time and the death rates. These devices can be installed at any remote location, even at work environment, and can be operated without the help of medical personal. This work focuses on fast-track generation of report and reaching the doctor even before the patient arrive.

**Key Words:** Internet of Things (IoT), LabVIEW, Sensors, Fast-track, Chronic

## 1. INTRODUCTION

Biomedical is one of the recent trends to provide better health care for the patients. IoT technology is opened not only in the hospitals, but also in the personal health caring facilities. Doctors play an important role in health check up, for this process requires a lot of time for registration, appointment and check up and also reports are generated later. Due to this lengthy process people tend to ignore the checkups or postpone it and many of them lost their lives. In the rural areas the hospitals are not in the reachable distance, so that people normally neglect any kind of minor issues. Once the health issue has been increased, they take the medical assistance. So, to avoid such problems the core objective of this paper is to design and implement the remote health monitoring by using the sensors to track the patient's health, and the patient condition will send to the health care by using the internet. This modern approach

monitors the patients outside of conventional clinical settings, such as in the home or in the remote area. All these are developed to reduce the healthcare cost by reducing the physician office visits, time, hospitalization and the testing procedure, the reports will be generated fastly than the regular medical laboratories, no need of the trained personal to take care of the patient's, reports can be easily created in local server and decreases the death rates. The sensors are readout by using the LabVIEW and the virtual instruments designed to analyze the data received. Various vital parameters measured are body temperature using LM35, Spo2 using max30100 and fall detection using ADXL335. These parameters are connected with the arduino board which is a low-cost open source IoT platform. The values can be displayed in the LCD display and as well as the LabVIEW. Integrated health records can be created by saving the parameters value to a cloud. These records can be passed by using the Wi-Fi module ESP8266. This provides an excellent provision for future reference and helps the doctors to analyze the pattern of variations in conditions of patients at regular intervals. If the data received is normal the report will be sent to the patient and the condition is critical the ambulance will be called, early detection of chronic diseases can be easy with this technology.

## 2. LITERATURE REVIEW

[1]The patient condition is checked continuously and stored in the server with the Wi-Fi module by Prajoona Valsalan, Tariq Ahmed Barham Baomar, Ali Hussain Omar Baabood (2020).[2]The patient medication will be remind by the intelligent medical box when it is time to take by O. Al-Mahmud, K. Khan, R. Roy and F.Mashuque Alamgir (2020).[3]The patient condition will be monitored by using the various sensors and the message can be send to the concerned people by using the GSM by M. Srilatha, K. Saketh, V. Sampath Kumar and B. Naveen Kumar(2020).[4]Using LabVIEW software the awareness and warning were given to the family members of falls by V.V.Rama krishna, N.Vasantha, B.HemaSundara V.Aswini,(2020).[5]The datas from the sensors had been send to the myRIO using the Wi-Fi module by Rathy G.A, Sivasankar P, Tamara Z. Fadhil (2020).[7]Temperature, heart rate, SpO2, Co2,ECG,EEG can



## 5. RESULTS

The normal body temperature for the human is 37 degree, if it exists more than 37.8 it is considered as a fever. The body temperature will change based on the climate and the fearness. If the temperature exceeds above the normal temperature the abnormal red LED will blink.

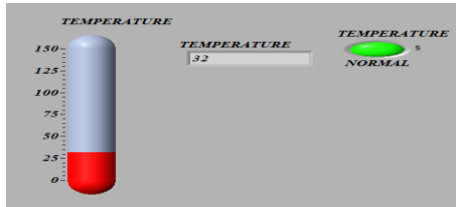


Fig 6: Results for body temperature

The blood oxygen level indicates the oxygen level present in our blood and the normal oxygen level for the human is between the 95% to the 100%.

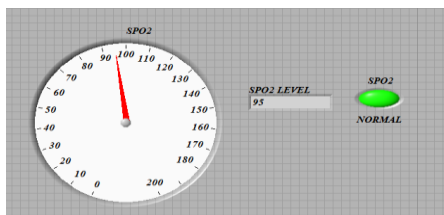


Fig 7: Results for oxygen level

The normal heart beat for the human being is 75 beats per minute and for the adults it can change upto 60 to 100 beats per minute. The heart beat will be more while running and while getting angry.

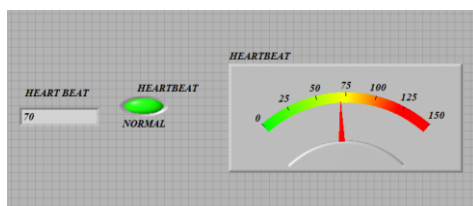


Fig 8: Results for heart rate

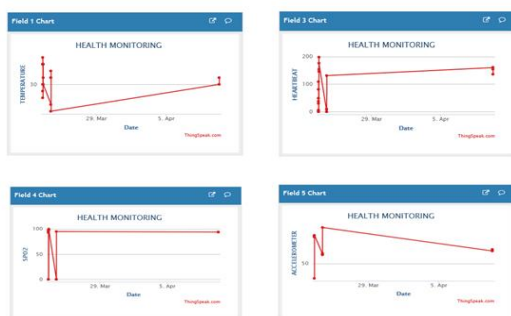


Fig 9: ThingSpeak results

## 6. CONCLUSION

In this project the system which we have proposed to monitor the patient health status remotely. Due to this the hospitalization costs, stays, spreading of diseases will be reduced. The reports will be generated fastly and be created easily in the local server and no need to train personal to take care of the patients.

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