International Journal of Research in Engineering and Science (IJRES)
ISSN (Online): 2320-9364, ISSN (Print): 2320-9356
www.ijres.org Volume 11 Issue 5 ǁ May 2023 ǁ PP. 737-739

Design and Development of Secured E-Health Data Acquisition, Transmission and Monitoring System:

G.INDHUJA [1], M.DHANESHWARI[2], R.PREMA[3],T.PRIYA[4]

Abstract: *During the current situations, Internet of Things (IOT) based health monitoring systems are potentially immensely beneficial for remote patients. This study presents an IOT-based system that is a real-time health monitoring system utilizing the measured values of body temperature, pulse rate, and oxygen saturation of the patients, which are the most important measurements required for critical care. This system has a liquid crystal display (LCD) that shows the measured temperature, pulse rate, and oxygen saturation level and can be easily synchronized with a mobile application for instant access. The proposed IOT-based method uses an at mega based system, and it was tested and verified for five human test subjects. The results obtained from the system were promising: the data acquired from the system are stored very quickly. The results obtained from the system were found to be accurate when compared to other commercially available devices. IOT-based tools may potentially be valuable during the pandemic for saving people's lives.*

KEYWORDS: *IOT based health monitoring system, LCD, Mega based system*

Date of Submission: 14-05-2023 Date of acceptance: 26-05-2023

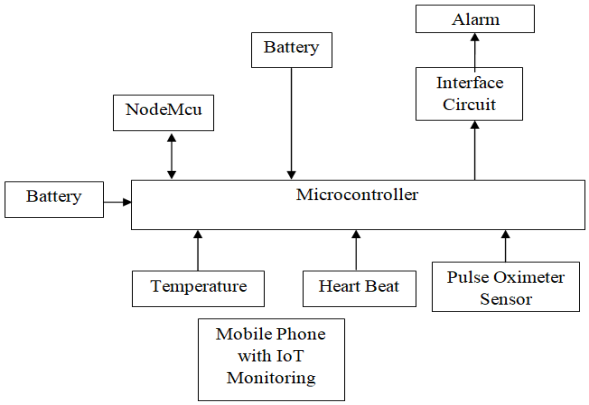
I.INTRODUCTION:

LoRa (Long Range) technology is a low-power, long-range wireless communication technology, which has emerged as a promising solution for IoT applications that require low data rate, long-range, and low power consumption. LoRa technology has a range of up to 10 kilometers in rural areas and up to 2 kilometers in urban areas, which is much greater than that of Wi-Fi and Bluetooth. The range of LoRa technology can be extended by using repeaters or gateways. LoRa also offers high interference immunity and can coexist with other wireless technologies.The proposed device in this article makes use of LoRa technology for transmitting the vital parameters of the patient to the health center or medical practitioner. This ensures that the data is transmitted over a long-range, and there are no chances of losing data during the transmission. The use of LoRa technology also ensures that the device is energy efficient, and the battery life is extended. In this paper, we present a multi-key (or multi-password) based mutual authentication mechanism and also to prove our algorithm is feasible on IoT devices with memory and computational power constraints[1].In this paper, we compare the impact of alternative server side stream processing topologies for ingesting and analyzing IoT sensor data in real-time[2].This paper proposes an animal behavior monitoring platform, based on IoT technologies[3].In this paper fuzzy-based rule schema to resolve the heterogeneity of environmental data in smart home environment[4]. In this paper we combined existing energy meter with the IoT technology and also a digital energy meter is connected with cloud server via IoT device[5]. This paper proposes a microservice design Science research practices and involving stakeholders' vision from the automotive and aviation industries[6].In this study, possible effects of industry 4.0 evolution over health sector including especially medical devices were investigated[7].

II.PROPOSED SYSTEM:

By exposing the human body to biosensors (Wearable sensors), we can measure any physiological parameters—blood-pressure.
level, glucose level, oxygen concentration in the blood. The sensors are directly connected to low power microcontrollers. These microcontrollers in turn connected to Wi-Fi module.

Block Diagram:



Hardware components:

1.NodeMCU:Used for WiFi communication between the system and the cloud platform.
2.Microcontroller: Used for processing the data received from the sensors and sending it to the NodeMCU.
3.Temperature sensor: Used for obtaining body temperature readings.
4.Heart rate sensor: Used for measuring the heart rate of the patient.
5. Pulse oximeter sensor:Used for measuring the oxygen saturation levels of the blood.
6.Mobile phone: Used for displaying the readings obtained by the sensors and sending them to the cloud platform.
7. Battery: Used for powering the system in the absence of a power source.
8. Alarm: Used for alerting the patient in case of an emergency.

Software components:

1. Cloud platform: Used for storing and analyzing the health data obtained from the sensors.
2. IoT monitoring software: Used for monitoring the health data transmitted by the system and generating alerts in case of abnormal readings.

III. CONCLUSION:

The availability of low-cost single-chip microcontrollers, and advances in wireless communication like IoT and Industry 4.0 technology has encouraged engineers to design low-cost embedded systems for healthcare monitoring applications. Such systems have ability to process real-time signals generated from biosensors and transmit the measured signals through the patient's phone to the medical center's server. The proposed system has the following features.

REFERENCE:

[1]. V. Schagin, M. N. Denisova, D. V. Schagin and L. G. Denisova, "Method for Correcting the Non-linear of Sensors in Medical Equipment", 2020 IEEE Conference of Russian. Young Researchers in Electrical and Electronic Engineering(ELConRus),pp.2415-2417,2020.
[2]. Z. Sherby, K. Hartke and C. Bormann, "The Constrained Application Protocol (CoAP)", IETF RFC, pp. 7252, 2014.
[3]. H-W. Kang, C-M. Kim and S-J. Koh, "ISO/IEEE 11073-Based Healthcare Services over IoT Platform Using 6LoWPAN and BLE: Architecture, Experimentation", International Conference on Networking aNetwork Applications (NaNA), pp. 313-318, July 2016.
[4]. D. Ugrenovic and G. Gardasevic, "CoAP protocol for Web-based monitoring ioT healthcare applications". 23rd Telecommunications Forum Telfor (TELFOR),pp.79-82, November 2015.
[5]. S. Y. Ge, S. M. Chun, H. S. Kim and J. T. Park, "Design and Implementation of Interoperable IoT Healthcare System Based on International Standards", 13th IEEE Annua Consumer Communications & Networking Conference (CCNC), pp. 119-124,January2016.

BIOGRAPH:

Ms.G. INDHUJA

Received the B.E Degree from KSR college of Technology, Tiruchengodu,India in 2014.The M.E degree from Annai Mathammal Sheela Engineering college Namakkal, India in 2018. Since 2018 she

has been working as an Assistant professor in Annai Mathammal Sheela Engineering college, Erumapatty, Tamilnadu, India. She is member of ISTE.
Email: indhujasekaran@gmail.com

Ms.M. DHANESHWARI
She obtained her BE degree of MEDICAL ELECTRONICS at Annai Mathammal Sheela Engg College at Erumapatty in 2023.
Email: dhanesanthi@gmail.com

Ms.R. PREMA
She obtained her BE degree of MEDICAL ELECTRONICS at Annai Mathammal Sheela Engg College at Erumapatty in 2023.
Email: premarsmece@gmail.com

Ms.T. PRIYA
She obtained her BE degree of MEDICAL ELECTRONICS at Annai Mathammal Sheela Engg College at Erumapatty in 2023.
Email: priyathangaraj786@gmail.com