



Smart Phone Powered Electrochemical Biosensing Dongle for Emergency Module Iot

Sesha Sai Sandeep V, A. Deepak

Abstract- As the growth in the online communication system it can helps the people in many ways. This communication can play a vital role in the medical application system using the IOT technology. The IOT is the one of the data gathering system which can provides the required data to the users at anytime and anywhere in the world. The medial IOT can collects all the medical details of the patient for example blood pressure, heart rate etc. This can provides the required information to the doctor. To faster communication of the data in the upcoming period the 5G network is going to implemented which can communicate the data at high speed. In this paper they proposes the use of the medical dongle powered by the smart phone which can sense the all the bio medical details of the patients such as the uric acid and the blood glucose level etc. This data can be sends to the doctor in high speed with reduce loss of data. This system more effective and reliable compared to the previous medical methods. This system can connects the bio sensor, online communication and the doctor which is more useful and convenient to the patient.

Keyword- Wi-Fi, Transceiver, Internet of Things, Throughput.

I. INTRODUCTION

In before systems there are lots of drawbacks due the less technology development. Due to the less development of technology there are lots of people can lead to death. But Today the growth in the technology can helps more in the medical field and it overcomes the major drawbacks in the existing system. The online medical world can helps the users more in the current technology. In today more people are get suffered from the health issues. The main reason is the way of living and the consumption of the food. Most of the people are taking unhealthy food which can affect the health in the major part. So that the increase in the patient in the hospital increase day by day. In this case we can't able to monitor the entire patient by the manual system in real time. So this paper proposes the online communication based medical IOT system. The IOT is the huge platform in the internet world, it can collects all the information of the users and it responds when the need of the data. It can connect the data mining and network communication. The medical method uses the disease prediction, Medical data collection, Medical AI.

The patient medical data are get collected in the data server. Medical data which is the patient blood glucose level, Blood pressure and all the disease it can be being collected in the dataset. The doctor and the required person can able to monitor the patient health data in the cloud platform by using the required API key of the data account. The account of the each user can be able to access by the other users by knowing the API key.

By the use of this online system we can able to protect many people from the danger. It can saves more time and provide the better solution in the short period of span. Here they propose the 5G network communication system which can transfer the data at high speed range. The data transmission can be made from the waves spectrum. The biosensor is used which can accessed from the smart phone that can gathers the bio medical data can transfers the data in the cloud platform. It consumes very less amount of power and is more reliable and flexible. So by using the 5G the data waves become faster. Now a days the bio sensor based electro chemical analyzer smart phones are getting evolved. It can continuously monitor the uric acid at the instant of time, heart rate and glucose level in the blood. These device can continuously monitors the body parameters and get communicate the details in the cloud platform. They can give the alert message to the doctor or the required person about the health condition. It can safeguard the patient from the danger. By providing the immediate message we can helps the person to save form the danger and able to provide the treatment. The dongle based electro chemical system has less cost, more speed and convenient to access at any time, less power consumption for the patient care diagnosis system.

II. LITERATURE SURVEY

Neel Kamal et., al., proposed the medical treatment are moving to the advance technology with the rapid growth in the medical field. The online medical system is get implemented in many parts of the world. In before period if the patient get suffered from any kind of disease he wants to directly went to the hospital and wait for some time and meet the doctor. During the waiting period anything can happen to the person. In this paper they proposes the E based health care system. It uses the IOT has the main tool which can stores the large amount of data in their platform. The Patient medical data which is sensed by the bio medical devices can communicate the bio data in the cloud. The patient can be monitored at regular interval of time. At each set of period the data can be updated in the cloud. With the help of the patient data it is more convenient to proceed the treatment.

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If the updated data is reaches critical level the doctor can takes immediate preventive measures to save their life. This online medical health care system can save the life and time. More medical treatment can be treated by the current technology. For example the cancer treatment it before time it is the deadly disease it is difficult to protect the patient, now we can able to cure the disease by the current medical system. [1] Subhra Shriti Mishra et., al., proposed in the area of rural the medical system is not much provided to the people due to the lack of facility. Due to the lack of the trained man power it is difficult to take of the people in the real time. This system uses the WSN method which is the wireless sensor network system they can communicate the data to the IOT platform. The WSN can play a major role in the medical field. It can consume less amount of time to transmit the data to save the people. In this method they use the three tier architecture which can use the WSN for the health care management system. Here the patient health monitoring system is implemented which uses the raspberry pi has the controller it can interact with the IOT to transfer the data from to the required at various distance. This method has four type of sensor heart beat, blood pressure, temperature and water level. These sensors have the threshold value when the monitor value goes beyond or above the critical value they send an intimation message to the doctor through the GSM. The data is get uploaded in the IOT. It can send the data immediately for every period of time. This method is get implemented with the help of the hardware which consists of the controller and the ESP8266 module to transfer the data in the IOT. It is more useful to patient which can connect the doctor to the patient at any time. [2]

Niket Patii et., al., proposed our country is secured by the help of the soldiers who can protect the country form the opponent party. For the soldiers the security is less so anything may happen to them. So to protect the life of the soldiers in this paper they propose the soldiers health care monitoring system using IOT. This method can track the health status of the soldiers and the location using GPS. The sensor can continuously monitor the health status of the soldier and sends the data to the control room through the IOT. It can be implemented in low cost, with effective data transmission in a limited period of time. Here the patient health monitoring system is implemented which uses the controller. With the help of the health data the soldier is being saved from the danger. With the help of the patient data it is more convenient to proceed the treatment. As the technology is developed the health care system is also get developed in the medical field. The data are get accumulated in the server. The body data are get fetched from the sensor and the medical details of the soldier are communicated through the IOT. [3] Md Anam et., al., proposed due to the changes in the way of living and change in the food consuming behavior and lot of stress. The people get suffered from various kinds of disease such as the cardiac failure, lungs failure and the heart disease. Form the old age people to the young age people most of them are get suffered from the health issues. In olden days even the old aged peoples are being strong in both physical and mentally the main reason is the food habit and the way of treating the environment is different from the today's situation. Due to

this several type of disease is get raised. So for this continuous patient health monitoring is needed the sensor can measures the whole body health of the patient and update the medical details to the doctor with the help of the IOT. The data are visible to the doctor on their computer screen. The data can shows whether the patient is in normal condition or abnormal condition. Based upon the data the treatment is made. The doctor can able to monitor the patient anywhere in the world. This system is cost effective and helpful to save the life of the patient. The immediate response is made depend upon the health condition of the patient. [4]

Vivek Pardeshi et., al., proposed as the increased number of patient in the hospital day by day So it not able to monitor the patients. It needs more number of doctors to monitor the patient. Numbers of doctor to be trained it needs more cost and needs the man power. This system uses the monitors the patient through online. In before the patient should be admit in bed and several sensor are connected and the doctor come to the each patient bed and check the health it is not much convenient. So we uses the portable health monitoring system it can measures the temperature of the body using LM35, blood pressure and oxygen level using MQ-2 sensor they can communicate the data at every period of time. The sensors are connected to the raspberry pi 3 node B which is more effective than controller. The raspberry pi has the wifi setup which can communicate the data to the IOT. This prototype is implemented and tested in four patient it can sends the exact health parameters with short time to the doctor which is helpful for the future treatment. [5]

Shreya Rajkumar et., al., proposed when compared to the before paper this paper uses the SHM method which is the Structural Health Monitoring to safeguard the people. The SHM method can undergo various researches and faces several challenges. It is a remote accessing system it can be monitored from anywhere. This method uses the raspberry pi and the ADC converter and the ESP8266 module. The piezo electric sensor is used which can gathers the data from the structure and communicate to the IOT. The MCP3008 act as the interfacing medium between the Node B and the PZT sensor. The data are being sensed and the sensed value are undergoes some mathematical calculation which is done in the raspberry pi. The sensed data are pushed to the THING SPEAK platform. Each thing speak as the individual API key and password. Through the API key we can able to monitor the patient medical data. [6] Ashwini Gutte et., al., proposed the IOT is the future technology in different field. The WSN which is emerged from the part of the IOT system. The super node in which the sensor are get connected to it. The transmission of data can be took place at specific baud rate which is 115200. It uses the tri axial acceleration in single node. In this paper they uses the local data processing node algorithm is implemented in the system to fetches he data from the structure. The Huffman code is implemented to increased the number of nodes by multiple times and to reduce the payload in the transmission path of about 75%.

This method can show the use of the both WSN and the IOT method. The SHM method can undergo various researches and faces several challenges. It is a remote accessing system it can be monitored from anywhere. As the technology is developed the health care system is also get developed in the medical field. This system is cost effective and helpful to save the life of the patient. The immediate response is made depend upon the health condition of the patient and it saves the time period. [7]

Kazi Abu Zilani et., proposed the IOT is the major cloud platform which plays a vital role in the health care system. But this system is not suitable in the developing countries like Bangladesh because of maintenance and high price. In this system they proposes the R3HMS which is the Remote Reliable and Real time Health Monitoring System which can implanted in low cost and requires less maintenance. This system can maintain the health of the patient continuously and update the data. The patient physical parameters like ECG, airflow. It use the microcontroller to sense the body parameters and send the data using ESP8266 module. The AWS to transfer of data between controller and cloud for the secure data transmission by the use of the MQTT protocol. The prototype is tested on several patient which provides the accurate data transmission. [8]

Suvarna Pawar et., al., proposed the wearable sensor network system is implemented in this paper to safeguard the workers in the industries. If the workers in the company is suffered from any health issues or suffered from the surrounding environment it can send the data about the physical parameters of the workers. The sensors are connected to the node in which the data are communicated to the network. This system uses the wearable sensor it can be operated at anywhere. The medical data of the workers are transmitted to the IOT through the LoRa network. This system is more effective and helps more employees in the industries to safe guard their life. [9]

Veena Tripathi et., al., proposed in today's world people are not take care about their health they run behind the work. They taking unhealthy food and suffering from more stress these are some main things which spoils their health.. This will lead to some disease such as heart attack, blood pressure etc. So we need to check our body every 6 months which can give the health status of our body. The body parameters are communicated through IOT to the doctor. The doctor can read the parameters can give some suggestion to take care the health depends upon the body parameters. By this way it makes the more people to take care the health and live a disease free life. [10]

III. REVIEW IN SMART PHONE POWERED ELECTROCHEMICAL BIOSENSING DONGLE FOR EMERGENCY MODULE IOT

In this paper they mainly proposes the WSN based health care monitoring of the patient which use the IOT as the platform. The medical dongle can monitors the body parameters through the smart phone and the sensed parameters can communicate to the IOT. The bio sensing data are collected in the cloud platform. This system is more effective by using the 5G technology which can communicate the data at high speed range. This system

consumes less power and time. It is highly effective and accurate. It provides a 95% positive result when it is tested.

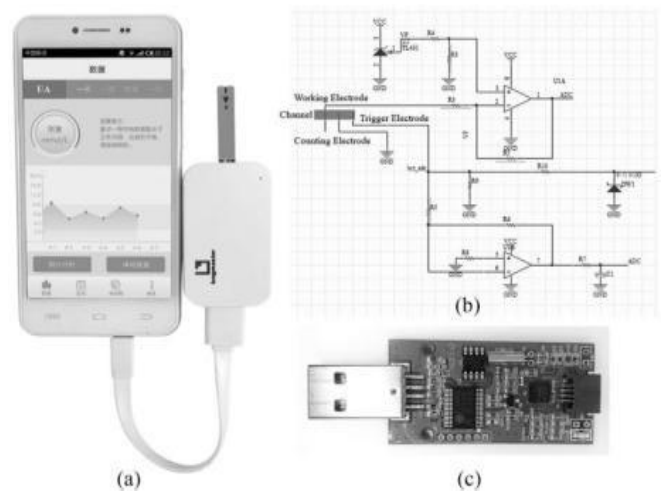


Fig 1: Architecture Diagram of smart Dongle

IV. RESULTS AND DISCUSSIONS

Many have done patient health monitoring system using wireless communication system. In our proposed system the sensors which is been connected to the patient will collect all the parameters of the patients and will update in the cloud server. Here incase of any emergency of a patient we need to send that particular patients parameters to the doctor in priority. For this only we have specially designed our project with smart dongle system. Here the data collected is temporarily saved in the smart phone. Incase of emergency when doctor needs the patient details the Wi-Fi dongle will be automatically switched ON and allows the patients data to get transmitted to the doctor in minimum period of time and thus the life of patient is saved incase of emergency situations.

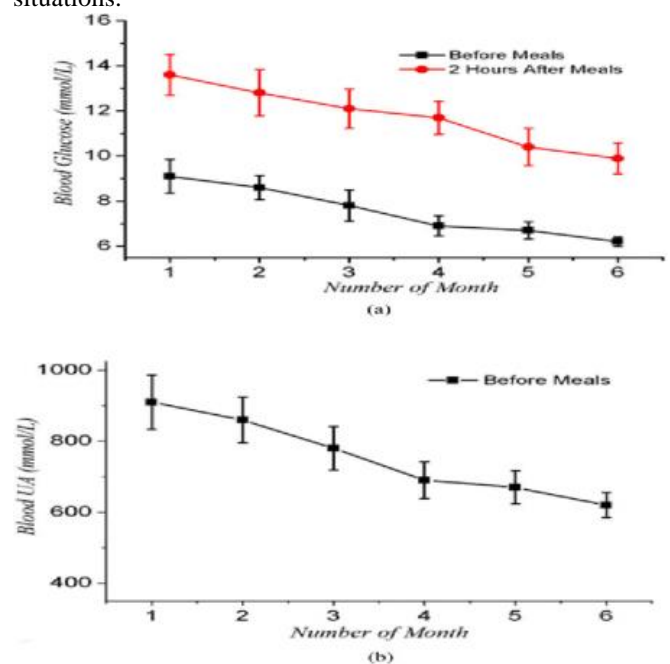


Fig 2: Glucose Level Monitored Using Smart Dongle

V. CONCLUSION

Patients health monitoring system plays a vital role in the field of medical electronics. Numerous life of humans is fully dependent on the medical electronics and doctors who are working on it. In the existing methods we found a common method that the monitoring of all the patients are been transferred to the doctor by wireless medium which is been operated manually. So this manual system makes the system more complex, but in our proposed system such kind of complexity never exists. In our system incase of emergency all the parameters are transferred automatically by using our own designed smart dongle. Thus this dongle is less cost effective and gives more accuracy in output. Thus the life of people is been safe guarded with our device.

REFERENCES

1. "Three Tier Architecture for IoT Driven Health Monitoring System Using Raspberry Pi" by Neel Kamal Indian Inst. of Eng. Sci. & Technol., Shibpur, India in 2018.
2. "IoT Health care Monitoring and Tracking" by Subhra Shriti Mishra Computer Science and Engineering, Maulana Azad National Institute of Technology, Bhopal, India in 2019
3. "Health monitoring and tracking system for soldiers using Internet of Things(IoT)" by Niket Patii Department of E & TC Engineering, Dr. Babasaheb Ambedkar Technological University, Maharashtra, Lonere-402103, India in 2017
4. "A complete Internet of Things (IoT) platform for Structural Health Monitoring (SHM)" by Md Anam Mahmud College of Science and Engineering, Central Michigan University, ET100, Mount Pleasant, MI 48859, USA in 2018
5. "Health monitoring systems using IoT and Raspberry Pi" by Vivek Pardeshi Department of ExTC Engineering, SSPACE, Wardha, MH, India in 2017
6. "Health monitoring system using Raspberry PI" by Shreya Rajkumar Department of Electronics & Communication Engineering, National Institute of Technology, Tiruchirappalli in 2017
7. "IoT Based Health Monitoring System Using Raspberry Pi" by Ashwini Gutte Department of Information Technology, Pimpri Chinchwad College of Engineering, Pune, India in 2018
8. "R³HMS, An IoT Based Approach for Patient Health Monitoring" by Kazi Abu Zilani Electrical and Electronic Engineering, Chittagong University of Engineering and Technology, Chittagong, 4349, Bangladesh in 2018.
9. "A Survery on e-Health Care Monitoring for Heart Care Using IOT" by Suvarna Pawar SGBAU, Amaravati in 2018.
10. " Monitoring Health Care System Using Internet of Things - An Immaculate Pairing" by Veena Tripathi Dept. of Inf. Technol., Model Inst. of Eng. & Technol., Jammu, India in 2017.

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