

Review of Patient Alert System

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Abstract: The wireless monitoring of patient have a great importance in the field of medical. With the help of micro sensors which are integrated into wireless communication networks, the physiological parameters of patient can be remotely collected and monitoring using traditional medical instruments can be avoided. In this project the monitoring of the patient is done by the doctor continuously without actually visiting the patient. Here, we make use of various sensors to sense the body parameters like pulse rate, temperature, blood pressure etc. This sensed signal is transmitted to Node MCU to update the data continuously. Using ADC which will convert this analog data into digital data through internet web portal, the data is sent to the monitor screen of the doctor's cabin wirelessly. Hence, doctor can access the patient from anywhere.

Keywords: Physiological Parameters, Data base, ADC, Various Sensors, OLED screen, Internet Web Server, Clouding.

I. INTRODUCTION

The doctor needs to diagnose the body parameters on the real time basis for treatment and diagnosis of the patient. In our project multiple patients are continuously and simultaneously monitored. We will also use visible alarms to indicate the severe conditions or in state of an emergency. This is advantageous and improves the operational efficiency and make is easy to early discharge of patient. The normal life of patient will be improved by reduction in the risk of infection and certain conditions when the doctor or nurse is not present there. This system describes the design of Node MCU based pulse rate, blood pressure and temperature measuring device which will display the content or information on the monitor display. When the threshold value exceeds, the visual warning will be displayed on monitor screen. With the help of clouding and internet web server we will send the data from patient's bed to the Doctor's cabin. This project includes simple and low cost components which are capable of processing pulse rate, temperature, blood pressure etc.

II. SYSTEM PLATFORMS

The previously implemented Patient Monitoring system Technologies are as follows:

1. GSM Technology:

It provides mobility to the doctors and medical in some part. Transmission of health care parameters in an easy way and at an accurate time. In case of an emergency it provides alert system. Hence, GSM is a reliable medium for the communication between the patient and doctor and also for real time data transmission. Due to real time monitoring and feedback facility, it becomes easy for doctor to take preliminary action.

2. PIC Microcontroller:

PIC Microcontroller is an electronic circuit which can be reprogrammed to carry out various operations. Using this

system the doctor can surveillance of patient's health condition for all the time. While monitoring the patient can be engaged in their own work. It provides low cost monitoring system.

3. Zigbee Technology:

Zigbee is a low power spin off of wifi. Its specifications are that it can be used for small and radios consuming low power based on IEEE 802.15.4-2003 Wireless Personal Area Network Standard. Zigbee Technology offers good platform for short distance communication. With the help of Wireless Sensor Network, doctor can visualize patient's real time data by using small wireless sensor. By using this data doctor can analyze physical state of patient and take the corrective action

4. Arduino Technology

The advancement in the communication field is very important for day to day life. Arduino is an open source software and computer hardware project. It designs and manufactures micro controller based kits for building digital devices. Real time health monitoring using Arduino can be implemented in hardware using different sensors to monitor the health conditions of patient.

III. EARLIER WORK

Ufoaroh S. U. proposed Heart beat monitoring alert system using GSM Technology. [1]This system has capability of providing real time monitoring of heart bit and also improvements of SMS and an alarm. It is designed so that the heart beat is measured by the sensor and it sends the data to the control unit for further processing and heart beat rate is displayed on an LCD. It then proceeds to alert by an alarm and SMS will be sent to the mobile phone of the medical expert, if and only if the threshold value of the heart rate is maximally exceeded.

Hence this system proposes a real-time, remote, safe and accurate monitoring of the heart beat rate and helps in patient's diagnosis and early and preventive treatment from cardiovascular issues.

S. Sakuntala proposed Remote Health Monitoring System using PIC Microcontroller. [2] This system was originated to monitor the vital signs of human body such as Heart beat rate, pH level, ECG, Body temperature and Oxygen saturation level. It is concluded that PIC (Programmable Interface Controller) has been the low cost implementation used for recording and transmitting the bio-medical signals by wireless technology and very useful to the remote patients. This system may also be made to include other health monitoring module like EMG, EEG for complete monitoring system.

B. Sirisha proposed Real-time Multi Patient Monitoring System using ARM and Wireless Sensor Network. [2] This paper provides a solution for enhancing the reliability, flexibility by improving the performance and power management of the patient monitoring system. In this system the patient's health is monitored continuously and the collected data is transferred to the centralized ARM server using WSN.

The Zigbee node is connected to the every patient alert system that will send patient's information. Upon system boot up, the mobile patient monitor system will continuously monitor the patients vital parameters like heart beat, body temperature etc. and will periodically send those parameters to a centralized server using ZigBee node.

Mala Lavanya proposed Reliable Transmission Protocol for GSM and http based on wireless patient monitoring. [4] This system is used to measure the parameters like oxygen level, ECG, body temperature, blood sugar, heartbeat with the help of biosensors. In this system the patient health is continuously checked and the acquired data is transmitted to an ARM server using zigbee wireless sensor networks. Embedded processor supports for analysing the input from the patient. The results of all these parameters are stored in the database.

Rupali S. Landage proposed Raspberry Pi based patient monitoring system using wireless sensor nodes [5]. This system is the wireless monitoring system for patients using WSN, Temperature Sensor, Level Detector, BP sensors and ECG electrodes. The data sensed by various sensors is sent wirelessly using WSN. This data is updated using Raspberry PI module. The advantages of this system are that it can monitor patient wirelessly and there is no necessity of checking them physically as all the data is being updated on to the doctors monitor after certain interval of time.

IV. PROPOSED SYSTEM

Earlier patient alert systems were designed using Arm controller, GSM technology, Arduino Board, Raspberrypi to overcome the drawbacks of the previous system We are going to design patient alert system Such that our system, we are using Node MCU which has inbuilt WI-fi. So it can easily connect to nearest wi-fi available in hospital premises or clinic. Previously implemented system have Bluetooth, GSM but does not have provision of wifi. This system is product based and provide accurate information about patients health. Also this system is less complex.

Hence, in this line of thought we proposed Patient Alert system using Node MCU. In our system, the various sensors sense the temperature, pulse rate and blood pressure from patient's body. This data is first collected. As the collected data is not in the digital form it is in analog form. So we will first convert it to digital form using ADC. The converted data is then transmitted to Node MCU using serial communication. This data is then transmitted to Internet Web Server. Data will send to cloud and within a span of few minutes the data is updated and displayed on the monitor screen of doctor's cabin. When these parameters exceeds above the predefined value this value will decide the warning condition through visual display at the doctor's cabin.

V. CONCLUSION

The Patient alert system using Node MCU is a reliable and effective solution for monitoring of patient. As it saves both cost and time of patient as well as Doctor. Earlier systems are more costlier than our system. These systems measure patients parameters separately but not simultaneously. Our system measures Temperature, Humidity, Pulse rate and Humidity simultaneously. Previously Sphygmomanometer were used for measuring diastolic and systolic pressure. Instead we are using BP sensor which is more reliable than sphygmomanometer and it does make patient being tether during checking. Hence new strategies are needed in order to reduce time before treatment. Monitoring of patients is one possible solution. Also, the trend towards an independent lifestyle has also increased the demand for personalized non-hospital based care. Proposed hardware is able to measure body temperature, pulse rate and blood pressure. This system is aimed at design of a low cost and portable daily usage device.

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