

IoT BASED INCESSANT SURVEILLANCE SYSTEM

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ABSTRACT

Internet of Things (IoT) is a new technological paradigm that can connect things from various fields through the Internet. IoT in healthcare improves the potential of treatment and medication to the patients. The proposed system monitors the patient's medical parameters such as temperature, sugar level, electrocardiogram, blood pressure level. The patient under this surveillance system can be easily identified in extremity condition. The sensors collect the patient's medical parameter data and send it to the cloud. It also keeps track of changes in the health parameters of the patient over the period of time. If any parameter surpasses, the alert will be send to the doctor or caretaker. The collected data are stored in the cloud channel. The patient and doctor details are warehoused separately in the cloud channel. It helps doctor in the easier diagnosing process. The doctors can be able to see all the recorded values from any location and also facilitates quick provisional medication. This system intensively cares the patient without hospitalization and also improves the quality of life independent living elderly people.

INTRODUCTION

Internet Of Things will make our world more autonomous by connecting the things in it. All the manual work system are gradually relying on the IoT based system to increase the efficiency. The devices used in the system are connected together and data are tracked and communicated using the cloud service. The IoT are used in the various fields such as agriculture, transportation, healthcare, manufacturing, construction, infrastructure, etc. IoT plays the vital role in the healthcare system. It provides the accuracy in measuring the medical parameters and helps in the diagnosing process. It can provide the better surveillance to the patient than the people. The increase in the death of the patient due the carelessness in monitoring the medical parameters of the patient. So commercially many sensor for monitoring the patient's medical parameters are raised. The sensors helps in continuous monitoring of the patient and also store the values in the database. Based on the rich collection of the data, the doctors can easily predict the diseases and they will provide the better treatment at the early stage. Thereby it makes to surpass the extremity condition in the life.

BACKGROUND:

In the prevailing health monitoring system, the 8051 microcontroller is used for communication. The analog to digital converter are not embedded in it. So it is difficult to efficiently use the sensor values in the system. In addition to it the system needs additional module to get the sensor values. The Bluetooth is used for the communication purpose but it can be used only within 10 meters. The data are stored in the local database only when the patients are within the Bluetooth range. All the data are not available to the doctors during the diagnosing process. In the proposed system the drawbacks are resolved. The sensor data are read using Arduino and the data are stored safely in the ThingSpeak cloud. The data are efficiently analysed in the cloud to represent in the efficient and in timely manner. By integrating the IoT techniques in this system will revolutionize the healthcare field and also increase the efficiency and the interoperability. The data transmission is also in the fast rate. This systems are able to provide services such as automatic alarm to the nearest healthcare institute in the event of a critical accident for a supervised patient.

SYSTEM ARCHITECTURE

DATA COLLECTION – The medical parameters of the collected through the various sensors such as the ECG sensor, respiratory sensor, temperature sensor and blood pressure sensor.

TEMPERATURE SENSOR

The temperature sensor used for the measurement of body temperature is LM35. The LM35 series are precision integrated-circuit temperature devices with an output voltage linearly-proportional to the Centigrade temperature. The LM35 device has an advantage over linear temperature sensors calibrated in Kelvin, as the user is not required to subtract a large constant voltage from the output to obtain convenient Centigrade scaling. The LM35 device does not require any external calibration or trimming to provide accuracy. The normal human body temperature is 32° celcius.

BLOOD PRESSURE SENSOR

Adraxx BMP180 Digital Barometric Pressure Sensor is a blood pressure sensor. It is used in measuring the absolute pressure of the body. The Device provides pressure as 16Bit values. The device will operate at only 0.3Ua meaning low current draw for battery powered

applications. The normal blood pressure level of the human 80-120.

ECG SENSOR

ECG Sensors is very light weight, slim and accurately to measures continuous heart beat and give rate data of heart beat. Electrodes of ECG Sensor have 3 pins and connected by cable with 30 inches in length. It is make ECG sensor easy to connect with controller and placed at the waist or pocket. In additional, the plug-in for the cable is a male sound plug which will make the cable to easily removed or inserted into the amplifier board.

RESPIRATORY SENSOR

The respiratory sensor used for measuring the respiration level of the patient. The normal breath rate of the human is from the 17-20 per minute.

The medical parameter from the patient body are sensed using the appropriate sensors. All the data from the sensor are send to the Ardiuno and it is connected to the cloud storage. The cloud storage provides larger memory space for storing the sensor data in the appropriate channel. The collected values are used for monitoring the multi-parameters of the patient. The

data visualization helps in effectively displaying the data to the doctor. The data are continuously send to the channel without any disruption. The wifi shield is facilitates the connection between the Ardiuno and the cloud. The Ardiuno code checks all the data read from the sensor if any data surpasses the appropriate value then the alert is send to the doctor or the caretaker using the GSM modules.

CONCLUSION

This system improves the autonomy and quality of life of elderly citizens. The health of the elderly persons is continuously monitored and updated using this system. All data are stored securely without any data loss in the cloud so the doctor can be able to predict the disease. It improves the effectiveness of medical service. It prevents the patient from the extremity conditions.

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