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IOT based Smart and Secure Health Care System Analysis & Data Comparison

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Abstract: Advances in ultimate technologies should be begun to the growth of the Internet of Things (IOT). During the new health care situation, the usage of IOT technologies makes the assistance of doctors and patients since they are utilized in various medical sections (such as real-time monitoring, patient data administration, and healthcare supervision). The body sensor network (BSN) technology is one the best technologies of IOT developments in the healthcare system, where patient body parameters can be observed using a group of small powered and lightweight wireless sensor nodes. In this Security or pricy of patient report is very essential aspect.
This paper highlights some essential protection provisions in BSN based modern healthcare system. .
Keywords: Electronic medical record, medical web ,tele –nursing , cardiovascular diseases

I. INTRODUCTION

Health care is one of the primary problems that the world faces irrespective of the case of a developed or developing country. The key issue in health care is that collecting all patient data stored in the electronic medical record then analysis and taking action on the patient. The new sensor is managing the health information and is established when the steady stream of fresh health data is collected at extraordinary rates. As the volume, velocity, and variety of health data that is collected and stored are dynamic, it is difficult to retrieve the data that is critical for analyzing. These data have to be compared to deciding by the physicians. Healthcare is mostly wireless this may result in various security threats to these systems. These are the security issues cloud poses serious problems to the wireless sensor devices. Data privacy is considered to be the most important issue in BSN, it is required to protect the data from disclosure

To avoid all such hazardous and maintain regular health and ensure the privacy of data transmission this system proposes a smart and secure health care system. The main purpose of the work is to develop a smart and secure intelligent health care system for a proper health parameter management by signaling an alert message to the medical web server for an instant of taking actions. This process is aided by the automatic drug delivery system which is interfaced with raspberry-pi to check the status of patient health and sends this information to medical web server.

II. OBJECTIVE

1) *Easy To Use:* It will be a very helpful tool as it shows all the data collection and information by using just only the internet. So, it decreases the workloads and stress of the relatives of the patient who work outsides.
2) *Better Patient Experience:* For being correlated to the health care system through IO T, doctors can improve diagnostic accuracy as they are getting all the necessary patient data at hand. In a word, we can say that it provides monitoring patients continuously and remotely.
3) *Provide An Accurate Detection:* By using this system, we can get an estimated result based on patient wellness. Moreover, it will be less error, collect data in less time and more efficient than any human achievement.
4) *Reduce Costs:* When a patient gets health service at home on a real-time basis, there is no need for an unnecessary doctor or nursing visit. In particular, this project helps to cut down costs for hospital stays and readmissions.
5) *Alert Doctors And Relatives:* Through IOT, doctors and relatives can do their job without any delay as they can monitor the patient's health status from anywhere. Moreover, it will send alerts whenever a particular health parameter goes behind the ideal limit. Furthermore, by receiving SMS alert doctors and relatives can take a certain action. Lastly, we can say that it saves lives in case of an emergency.
6) *Giving A Quality Life For Old Aged People:* Most of the people at their old age, like to stay at home with their dear ones rather than visiting or passing time in hospitals. But hue to hectic lifestyle people are suffering from many diseases at their early age and the older people become very weak. Additionally, this project will be beneficial to ICU patient.

7) *Shows The Outcome Of The Treatment:* By accessing patients health data in real time information helps to make decision for the doctor on how the treatment is going on and what should do next. Over all, this project will enable the physicians to utilize the results from data collection and analyze that data in real time.
8) *Non Expensive:* This project total cost will be less expensive than any other machines which are used in the hospitals. Moreover, it is compact, lightweight and easy to use.
9) *Bridging The Gap Between Doctor And Patient:* Health care is all about the patient so the need of the patient always comes first but it is a matter of fact that most of the patient feel uncomfortable to go to hospital or visit doctor's chamber. In this way, this system creates a communication between patient and doctor by providing the data.

III. BSN HEALTH CARE SYSTEM

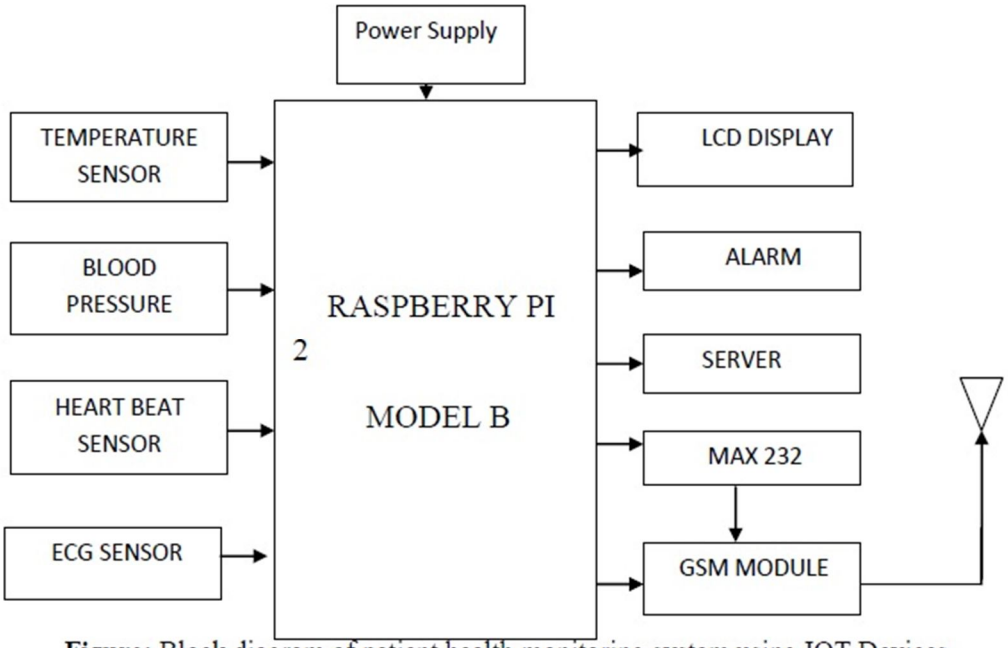

Figure: Block diagram of patient health monitoring system using IOT Devices.

Figure shows the basic diagram of health care process in which the specific sensors uses according their applications.
The system can determine the patient health by measuring the time to time with ECG, temperature & Blood pressure sensor. The sensed data is secured for integrity & privacy by using security algorithm & sent to a remote server via a wireless link.
The forecast of health parameter for the future and learning how to select the daily checkup is based on historical data through electronic medical record base (EMR).If the abnormal health parameter are identified then required action will takes place through automatic drug delivery or calling emergency team. Quickly analyzed data forwarded to the emergency team for the next treatment, a medical record could help to learn and make the better selection of medicine

IV. HARDWARE IMPLEMENTAION

To run the system first we need to connect the Raspberry pi module with the power supply as the main control unit. In the data side, we have a heartbeat sensor, a blood pressure sensor, and some manual buttons. On the other hand, the output is shown in the LCD. Moreover, the GSM Module helps to send data in the cloud and when the data gets uploaded, we can control the output by using a Laptop or Computer by log in to the server. First, of every, a finger is placed in the pulse sensor and the push button is also pressed so that the system can read data. After that, it shows a result in the LCD. Also, by pressing another push button, it can upload the output on the webpage and APP and send text information through the GSM module. A similar method is done with the ECG sensor but rather of putting a finger, 3 electro pads are located in the body and the data section is taken but LCD is inadequate to show the ECG result in its display as the numbers are too large. For this case, by pressing push-button, data is sent through the GSM module and shows the ECG curve in the Web page and the APPs. This is all about the block diagram which confers the entire method of hardware.

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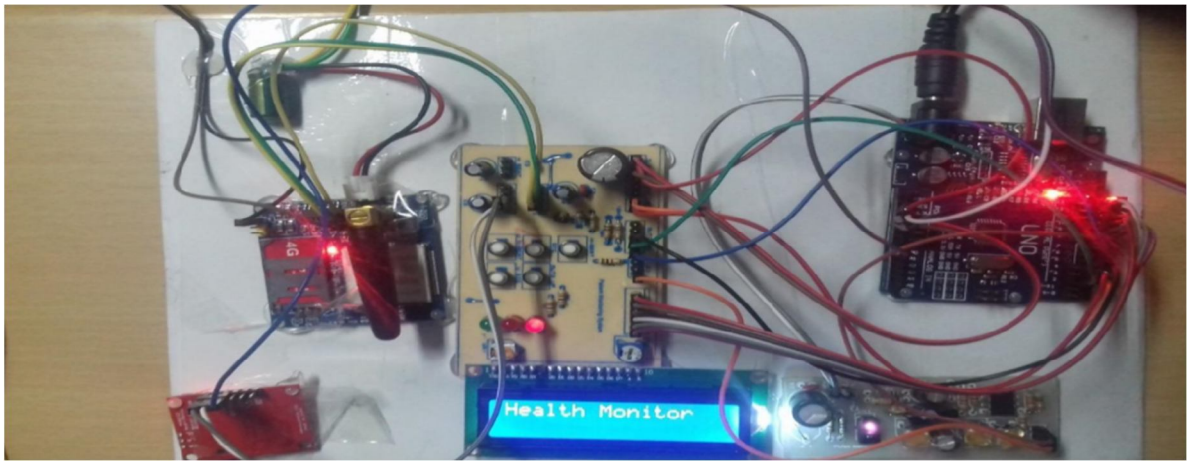
V. RESULT & DATA ANALYSIS :-

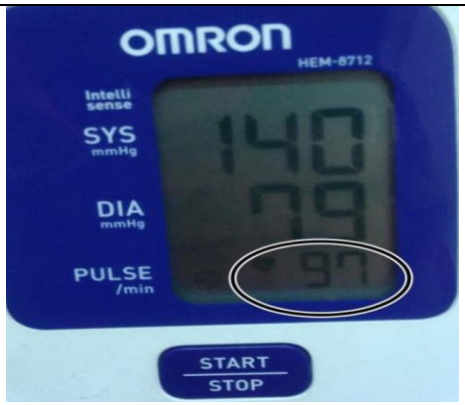
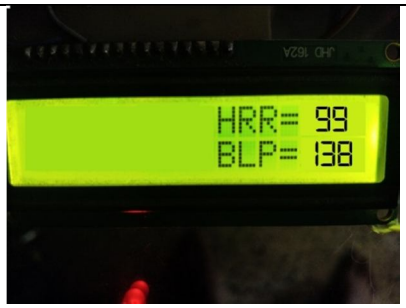
After connecting and programming all the components with each other, we have performed the experiment. According to the proposed system, we have designed prototype IOT based Patient monitoring System. Raspberry pi, GSM module and all the sensors are connected .



A. Heart Beat & Blood Pressure Data Analysis

We have measured the health parameter of the particular age group of patients like some females 12 to 33-year-old and male 34 to 66-year-old. compared to our system to doctors equipment & found some result

Date & Time	Age	sex	Heartbeat & Blood Pressure output from BP machine	Output from our system
14-1-2020 10.20 Am	12- 22 old	Female		
Date & Time	Age	sex	Heartbeat & Blood Pressure output from BP machine	Output from our system
14-1-2020 10.30 Am	23 -33 old	Female		

14-1-2020 10.40Am	34-44 old	Male		
14-1-2020 10.50 Am	45 – 55 old	male		
14-1-2020 11.00 Am	55 to 66	male		

VI. CONCLUSION

This is a review paper focuses on a Patient health care monitoring and how to increase drug delivery efficiency. proposed IOT based smart health system a portable physiological monitoring method is performed, which container continuously observes each patient's heartbeat, blood pressure and different critical parameters in the hospital. We introduced a constant monitoring and key mechanism to monitor the patient's health and collect the patient data's in the server using Wi-Fi Module based wireless communication, we also introduced remote health care data recovery and intelligent storage methods.

The project is very necessary to get the treatment system extra advanced. In the designed method the improvement would be attaching more further sensors to the internet which includes various other health parameters and would be helpful for patient monitoring and drug delivery system.

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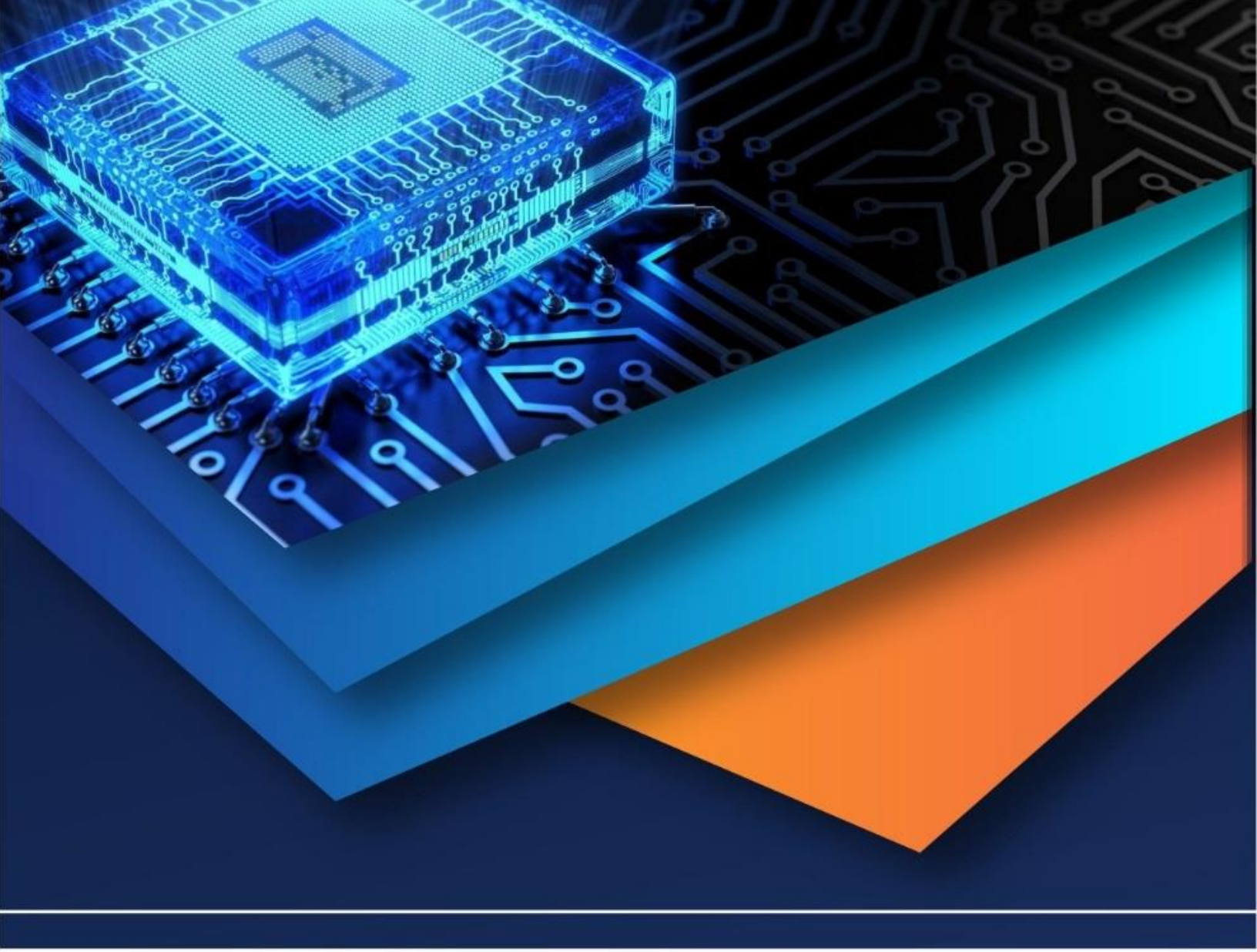

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