International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 8 Issue 11, November-2019

A Survey Paper on Patient Health and Saline Level Monitoring System using IoT

Rutuja Deshmukh[1], Kshitija Jadhav[2], Tejaswee Borude[3], Harshada Lanke[4]
[1,2,3,4]Student,
Department of Computer Engineering,
JSPM ICOER Wagholi, Pune

Madhavi Darokar[5]
[5]Professor,
Department of Computer Engineering,
JSPM ICOER Wagholi, Pune

***Abstract*:- In this paper, a sensor is attached to the patient's body to collect all signals from the wireless sensors and sends them to the base station. They are able to detect heart rate, blood pressure, temperature and so on. This system can detect abnormal conditions, alarm the patient and send an SMS / email to the doctor. The system allows the anesthesiologist to simultaneously monitor and share the Android app through a cloud-based solution. More than one patient can be monitored at a time. The main advantage of this system compared to previous systems, is that it reduces energy consumption and safety. The Android app can connect multiple patients at once, so the anesthesiologist can easily follow different surgeries in parallel. In addition, automatic monitoring of the proposed saline level consists of level sensors that are used to determine the status of the liquid in the bottle, either normal or alert. The detection of saline drop rate is quite reliable. The output obtained from the sensor is processed to verify that the saline bottle is empty. Thus, innovative health and saline patient monitoring systems are being developed with less human intervention, which will be available at low cost in rural and urban areas.**

Keyword: Transmitters, IOT, Cloud, Real time, systems Sensors, Hardware, Monitoring, Receivers.

INTRODUCTION:

Internet of Things (IOT) is becoming more and more important in daily lives. Nowadays the interconnection between objects is not only a desirable property, but it is a requirement for any competitive system currently in the market [2]. Data sharing can now be enabled by several types of smart-devices, e.g. smart-watches, tablets, smart-phones and others, thanks to their possibility to connect to the Internet. In addition, by exploiting on-line Cloud platforms, data can be accessed by everyone, at any time and from any place. These portable smart-devices play an increasing relevant role in IOT systems, thanks to their small dimensions, light weight, low costs and great number of integrated sensors [3]. During the last few years, IoT research has evolved
widely in the field of healthcare. The existence of wearable, wireless and low power sensors, placed in strategical parts of the body, enables the creation of body networks, leading to the creation of monitoring systems for personalized medicine strategies [5]. Different types of sensors are able to simultaneously monitor different physiological parameters and to share the measured data by exploiting wireless connections [4]. Furthermore, with a secure storage, e.g. on cloud or on physical devices, the data measured by the patients' sensors can be collected and accessed by allowed medical doctors so that an appropriate and safe remote monitoring is ensured .

LITERATURE SURVEY

Innovative use of IoT technology in healthcare provides not only benefits for doctors and managers to access many different data sources, but also challenges in accessing heterogeneous IoT data, especially in the mobile environment in real-time IoT application system. The big data collected by IoT devices creates the problem for IoT data interests[1].

The purpose of the review is to visualize existing technology in location-based healthcare services and make use of this technology for development in future discoveries. In addition, the study helped us understand the many flourishing and existing health technologies such as ECG, EMG monitoring through Android apps, using different protocols to transfer data like MQTT, TCP / UDP, OCN-authenticated technologies, WLAN etc. [2]

In this article, we analyze the wireless health monitoring system of human temperature and heartbeat patients using ZigBee, GSM and SMS. Any abnormalities in health conditions are reported via SMS to the indicated mobile number via GSM. The hardware is implemented and the output is studied. [3]

The traditional methods used for health care are becoming obsolete due to population increase. Today's healthcare system requires manual care and its heavy tasks, which is time consuming. Innovative health monitoring systems with less human intervention are needed, which will be available at low cost in rural and urban areas. Engineering technologies are being coupled with the medical field to solve this problem. Thus, sophisticated health monitoring systems are being developed with the help of easily interfaced electronic components such as sensors, PLCs, microcontrollers etc.. This article focuses primarily on providing advanced saline level monitoring system. [4]

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 8 Issue 11, November-2019

As the world's population grows, so does the need for health care. In recent years, progress in health care has been rapid due to advances in the field of sensors, microcontrollers and computers. One of the main reasons for this is the combination of the two important disciplines, namely medicine and engineering. This paper describes the development of an automatic saline monitoring system using an indigenous developed low cost sensor and GSM (global mobile communication system) modem. This allows the attending physician or nurse to monitor the saline flow rate at a distance. The 8051 microcontroller is used to provide coordinating action. An infrared sensor is used at the neck of the saline bottle to know the flow rate of the liquid. The detection of saline drop rate is quite reliable. The output obtained from the sensor is processed to verify that the flow rate is slow, medium or fast and is transmitted through GSM technology to a distant mobile cell for future action. [5]

CURRENT SYSTEM

In current health care measures, nursing professionals are responsible for managing, monitoring and providing care to the patient receiving saline. The roller clamp is used to manually control the saline infusion rate in hospitals. If the roller clamp rotates one way, it compresses the intravenous tube harder, which makes the tube thinner and allows saline fluid to flow through a slower rate. If it is rolled in another direction, it loosens or releases saline tubing, which makes the tubing thinner and allows saline fluid to flow through a faster rate. In today's world, there is no monitoring system that reduces patient dependence on nurses, doctors, and also reduces the need for nurses to go to the patient's bed every time to check each patient's saline status. Therefore, the development of an IoT-based saline level monitoring system is required.

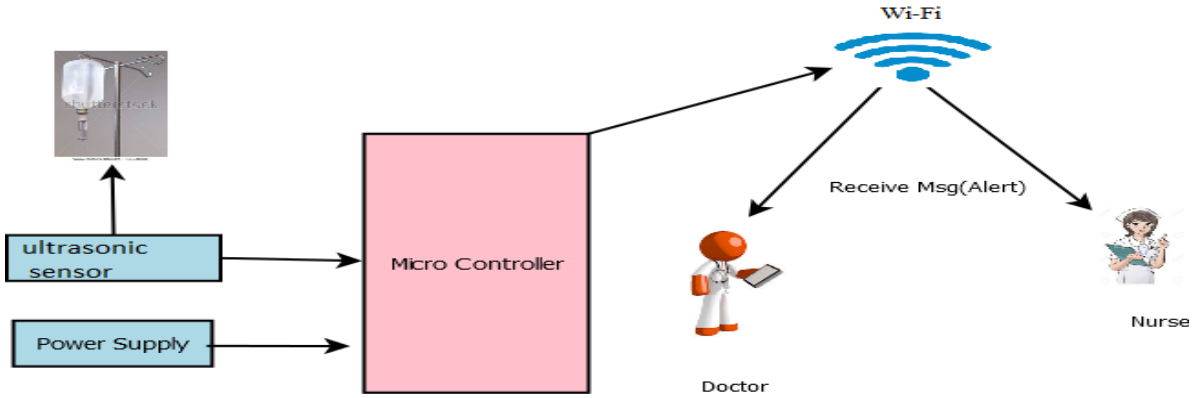

Fig. 1: Current System Architecture[4]

LIMITATIONS OF CURRENT SYSTEM

- Needs TDM system to monitor coma patients.
- The current system is used for normal inpatients only.
- Under abnormal conditions, patients depend on nurses or doctors.
- The system checks the saline level only.

PROPOSED SOLUTION

- The system spontaneously informs the doctor / nurse for patient safety.
- To automatically stop flow after emptying the saline bottle.
- Do not need the TDM system to monitor comatose patients.
- The system is also used in coma patients to check heart rate, blood pressure and body temperature.

PROPOSED SYSTEM

In the proposed system, a coordinating node was attached to the patient's body to collect all signals from the wireless sensors and send them to the base station. The sensors attached to a patient's body form a wireless body sensor network (WBSN) and are capable of detecting heart rate, blood pressure, and so on. This system can detect abnormal conditions, alarm the patient and send an SMS / Email to the doctor.

This may initially be inferred as a casual phenomenon, but the consequences are often fatal. Shortly after the saline has finished, blood returns to the saline bottle due to the difference in blood pressure and the empty bottle. Thus, innovative health monitoring systems are being developed with less human intervention, which will be available at low cost in rural and urban areas. The proposed system aims to solve problems of the above mentioned problem effectively. With this, the nurse can monitor the amount of saline even in the control room. Automatic salt level monitoring consists of level sensors that are used to determine the status of the liquid in the bottle, either normal or alert. The detection of saline drop rate is quite reliable. The output obtained from the sensor is processed to verify that the saline bottle is empty.

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 8 Issue 11, November-2019

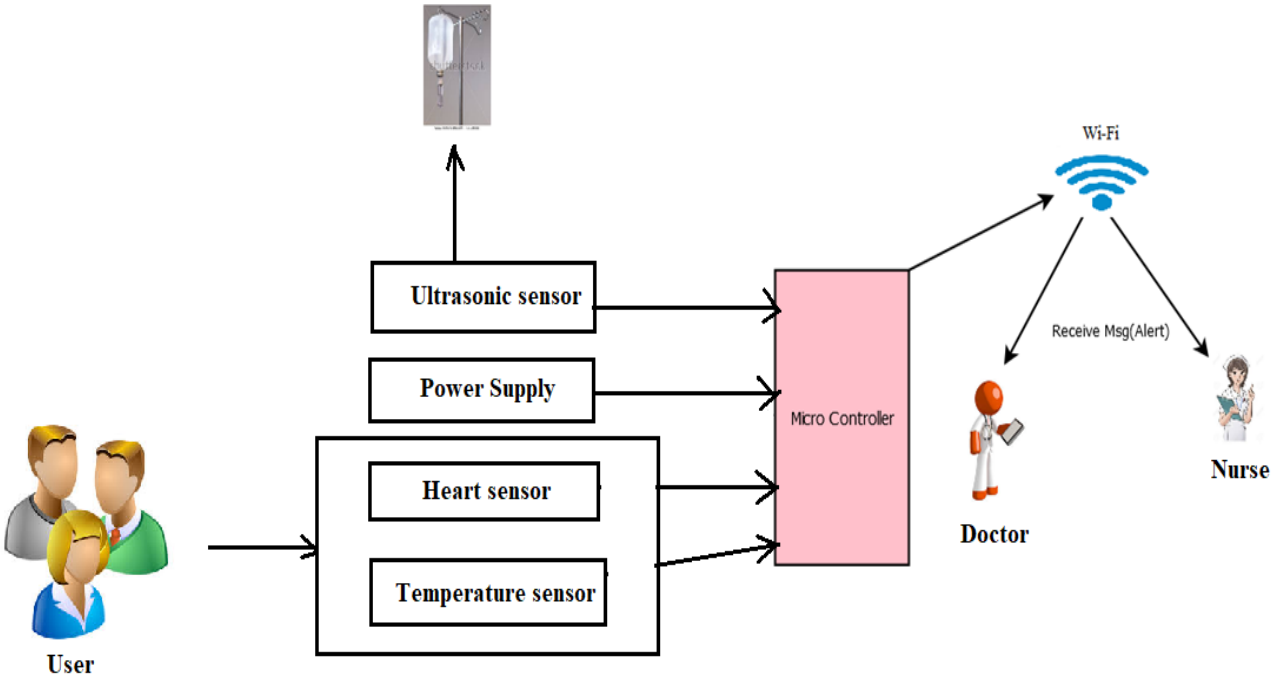

Fig. 2:Proposed System Architecture

CONCLUSION

The anesthesiologist can monitor several patients in parallel. In case of any anomaly in the measured data, the doctor is alerted by a notification sent by the Android app. In this proposed system, it is possible to automatically monitor the salt flow rate using the microcontroller. It can send data wirelessly to nurses or doctors, computer and display the results in the form of saline droplet rate, number of droplets coming from the saline bottle. The system is reliable, economical and convenient for patient health and saline level monitoring.

REFERENCES

[1] K. Natarajan, “Smart Health Care System Using Internet of Things” Journal of Network Communications and Emerging Technologies (JNCET Volume 6, Issue 3, March (2016)

[2] Rameswari. R, Divya. N “Smart Health Care Monitoring System Using Android Application: A Review” International Journal of Recent Technology and Engineering (IJRTE)

[3] Manisha Shelar, “Wireless Patient Health Monitoring System” International Journal of Computer Applications Volume 62– No.6, January 2013.

[4] Mansi G. Chidgopkar , Aruna P. Phatale "AUTOMATIC AND LOW COST SALINE LEVEL MONITORING SYSTEM USING WIRELESS BLUETOOTH MODULE AND CC2500 TRANSRECEIVER " International Journal of Research in Engineering and Technology ; Volume:04 Issue: 09 |September-2015

[5] C.C. Gavimath , Krishnamurthy Bhat , C.L. Chayalakshmi , R. S. Hooli and B.E.Ravishankera "DESIGN AND DEVELOPMENT OF VERSATILE SALINE FLOW RATE MEASURING SYSTEM AND GSM BASED REMOTE MONITORING DEVICE " International Journal of Pharmaceutical Applications Vol 3, Issue 1, 2012.

[6] Pattarakamon Rangsee,Paweena Suebsombut,Phakphoom Boonyanant "Low-Cost Saline Droplet Measurement System using for Common Patient oom in Rural Public Hospital " The 4th Joint International Conference on Information and Communication Technology, Electronic and Electrical Engineering (JICTEE) 978-1-4799-3855-1/14 2014

[7] Devendra P Gadekar, Dr. Y P Singh,” Efficiently Identification of Misrepresentation inSocial Media Based onRake Algorithm” in International Journal of Engineering & Technology, 7 (4.36) (2018) 471-474.

[8] D. P. Gadekar, N. P. Sable, A. H. Raut, “Exploring Data Security Scheme into Cloud Using Encryption Algorithms” International Journal of Recent Technology and Engineering (IJRTE), Published By:Blue Eyes Intelligence Engineering & Sciences Publication, ISSN: 2277-3878, Volume-8 Issue-2, July2019, DOI: 10.35940/ijrte.B2504.078219, SCOPUS Journal.

[9] P.Kalaivani, T.Thamaraiselvi, P.Sindhuja and G.Vegha "Saline Level Monitoring System Using Arduino UNO Processor " Asian Journal of Applied Science and Technology (AJAST) Volume 1,March 2017.

[10] Priyadharshini.R, Mithuna.S, Vasanth Kumar.U, Kalpana Devi.S, Dr. SuthanthiraVanitha.N. "Automatic Intravenous Fluid Level Indication System for Hospitals" International Journal for Research in Applied Science & Engineering Technology ; Volume 3 Issue VIII, August 2015.