WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

DRIP SALINE LEVEL MONITORING AND AUTOMATIC ALERT SYSTEM USING ARDUINO AND GSM

Dr.C Rangaswamy[1], Neha V[2], Prathibha V D[3], R Saikrithi[4]

[1] Professor and Head Dept of Electronics and Communication SJC Institute of Technology Chickballapur,Karnataka,India crsecesait@gmail.com

[2] Dept of Electronics and Communication SJC Institute of Technology Chickballapur, Karnataka, India nehavneha14581@gmail.com

[3] Dept of Electronics and Communication SJC Institute of Technology Chickballapur, Karnataka, India prathibha1177@gmail.com

[4] Dept of Electronics and Communication SJC Institute of Technology Chickballapur, Karnataka, India rsaikrithi2002@gmail.com

ABSTRACT

A scarcity of nurses in overcrowded hospitals can endanger the health of patients, causing them to deteriorate more quickly or, in the worst situation, cause their death. A prototype of the GSM-based IV Bag Monitoring system, a load cell-based IV-bag fluid level monitoring system that allows single platform monitoring and offers an alarm system when the infusion is finished, has been offered as a solution to this problem and to reduce workload. Patients can access health services through the proposed system, with a focus on critical care units (ICUs).

Heart rate and temperature monitoring, among other therapies, is the most crucial treatment that hospitals provide to a large number of patients. The GSM Based Liquid Level Monitoring System was created to lessen treatment risk and ease the workload of hospital and nurse personnel. This device uses a load cell sensor to continuously measure the liquid level. With Arduino, a real-time alarm is sent to the concerned nurse and personnel whenever the fluid level falls below a predetermined level. As a result, this method helps patients and nurses both throughout the day and at night. The provision of an enhanced saline level monitoring system is the primary goal of this project. As a result, this study outlines the design and development of a dependable, affordable, and automatic saline level indicator.

1. INTRODUCTION

According to the National Health Policy, India is ranked 154th out of 195 developing nations in the globe. The goal is to increase public health spending from its present level of 1.5% of GDP to 2.5% by the year 2017. 4% of these resources, with a relatively small portion going toward primary care. It continues to be the main source of employment and plays a significant role in the Republic of India's socioeconomic growth. For India to advance, attention is crucial.

Republic of India's health facility expansion has been uneven. Attention automation is a growing field in nursing that is unheard of in the United States. Children in the modern era have no time to focus on attention because tasks need more time and effort. From a business standpoint, there's enough of profit. Automating tasks reduces stress and saves time. Attention automation is a growing field in nursing that is unheard of in the United States. Children in the modern era have no time to focus on attention because tasks need more time and effort. Automation reduces time and stress for the nurse or monitoring person. We need to save many people's lives as we transition towards a more modern approach to healthcare. There are numerous drawbacks in the assault because of a clot of air embolism in blood vessel fluid flow, medication mistakes as a result of multiple surgeries and clinic visits. In addition to attempting to address those problems, this effort aims to draw children's attention to a growing field that will eventually be necessary. The nation's intravenous infusion systems are manually operated devices that do not adhere to patient safety standards, especially in urgent circumstances when the infusion needs to be closely watched. Therefore, an automated system for monitoring saline fluid is suggested in this project in order to save the patient's life and also to lessen the need for constant fluid monitoring in hospitals when there are many patients assigned to a small number of nurses.

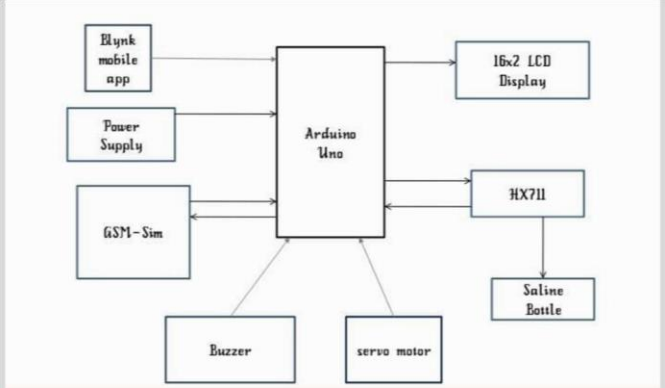
2. PROBLEM STATEMENT

The main problem with IVs is that a nurse would have to change or refill the IV. When there are only one or two nurses for every ten to fifteen patients during the hospice day, this procedure is typically exceedingly taxing and time-consuming, requiring the full participation of nurses.

Even with a highly sophisticated IV indicator, the issue of alerting the patient when to replace the IV is not resolved, and it is first and foremost exceedingly costly.

3. PROPOSED SYSTEM

In this procedure, the load cell measures the saline bottle's weight and provides an analog value. The load cell amplifier (HX711) converts analog to digital, and the microcontroller receives the digital value. The level is shown on the website and on the LCD display. Upon reaching a salinity of 10%, the flow will be automatically stopped the nurse will be informed by the buzzer. Additionally, users of the website can halt the flow at any moment.



5. SOFTWARE DESCRIPTION

Arduino IDE

The open-source Arduino project makes it simple to take advantage of the potent Atmega chips for hobbies. The software used to write and upload code is called the Arduino IDE. it to the Atmega chip. The code is then executed on the Microsoft has produced two widely used operating systems: Windows 7 and Windows 10. The most recent version of the Windows operating system, Windows 10, was introduced in 2015, replacing Windows 7, which was released in 2009.

Compared to Windows 7, Windows 10 has a number of enhancements, such as enhanced security features, quicker performance, and regular updates chip. The majority of 3D printer electronics are compatible with Arduino, using the Atmega chip and allow the user to utilize Arduino to upload their code. Megatronics, Minitronics, and RAMPS are examples of this. Software firmware is required before you can use the electronics. A few alternatives in this regard include Marlin, Sprinter, and Repeatier. It converts machine instructions into actual seconds. This page does not discuss the firmware itself. You can update the firmware on your devices with an Arduino board.

Windows 7/10

Embedded C

Embedded C is the name of the programming language extension for C. It is typically used to create apps that are microcontroller based.

6. APPLICATIONS

1. Doctors in any area of the hospital can use this technology to analyze patients.

2. People of all ages who are ill, injured, dehydrated from activity or the heat, or having surgery can utilize them.

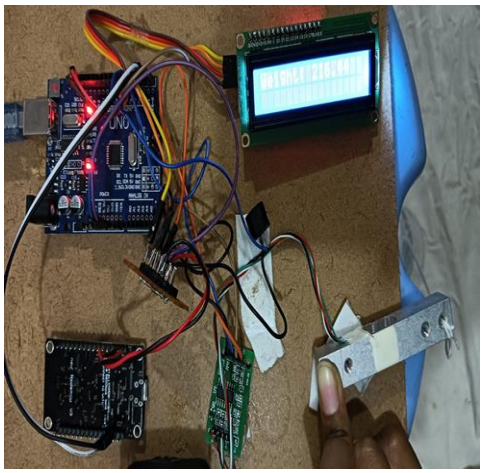
3. Beneficial for solar power plant surveillance systems

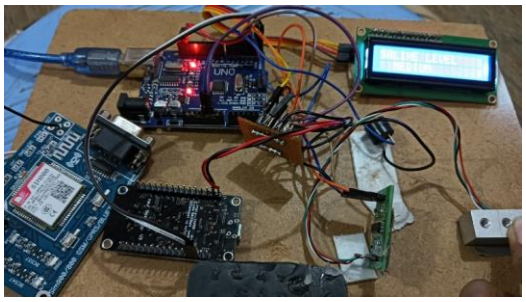
7. ADVANTAGES

1. Less manpower is available.
2. Free of noise
3. It's easy to use the system
4. Easy to use

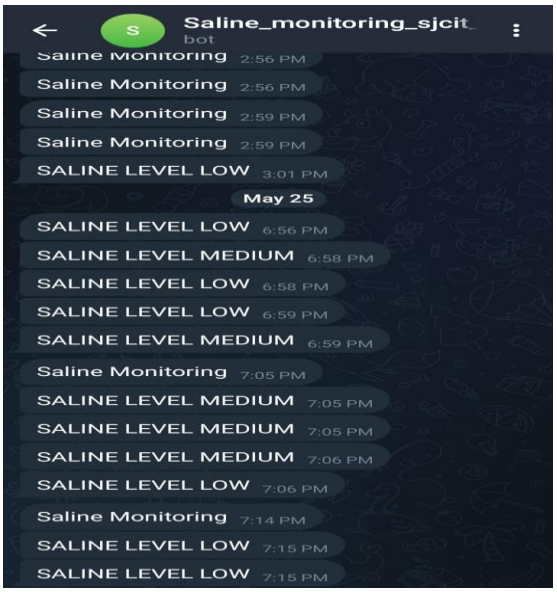
8. RESULT

The implementation phase can be divided into hardware implementation and software implementation since the system's whole operation is systematized through the use of a hardware device and an application interface





DETECTION OF SALINE BOTTLE LEVELS



NOTIFICATION OF SALINE MONITORING

The weight of the saline bottle serves as an oblique indicator of its saline content. There are three predefined levels (HIGH, MEDIUM, and LOW) that show the level of saline present in the bottle. If the level is between 350 and 500 g, the condition is classified as HIGH. A saline bottle that weighs between 200 and 350 grams is classified as being in MEDIUM condition. A weight of less than 200 grams is regarded as LOW. The conditions listed above are easily explained.

9. CONCLUSION

The manual labor of the nurses to regularly check on patients who have had saline injections will be lessened with the use of an automatic saline monitoring system. Very little human intervention or activity is needed at the center because the entire suggested framework is automated [15–17]. It will be especially useful at night as the nurses won't have to worry about periodically checking the saline level in the saline container, which is a scary task. Additionally, it prevents the patients from suffering injuries from blood clots returning to the saline container, which can occasionally have the deadliest influence.This will ease the burden of ongoing observation by the medical caregiver at a fair cost.

10. REFERENCES

1. Shyama Yadav and Preet Jain, "Real-time costeffective e-saline monitoring and control system," in Control, Computing, Communication and Materials (ICCCCM), Allahabad, India IEEE, January 2021.
2. 2S Smart Saline Level Indicatorcum Controller by Manoj Kumar Swain, Santosh Kumar Mallick, and Rati Ranjan Sabat International Journal of Application or Innovation in Engineering & Management.
3. Rohith, and K.Pavithra, "IoT Based Patient Health Monitoring System," International Research Journal of Modernization in Engineering Technology and Science, vol. 4, no. 3, 2022.
4. IoT based saline level monitoring systemDecember2020 IOP Conference Series Materials Science and Engineering 981(3):032095 May 2020.
5. Mrs. B. Kiruthiga, Babithasri S, Gayathri U, Nandhini S, “Iot Based Drips Monitoring System In Hospitals”, International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engi- neering, Vol. 09, issue no. 04, pp.: 2321-2004, 2021
6. P Pearline Sheeba, N Anushree, and L Aishwarya 2016 Saline Infusion Level Detection and Heart Rate Monitoring System International Journal for Research in Applied Science & Engineering Technology 4(XI) 637-641
7. Shyama Yadav and Preet Jain 2016 Real time cost effective e-saline monitoring and control system International Conference on Control, Computing, Communication and Materials(ICCCCM), Allahbad,India, pp. 1-4
8. D Kothandaraman, M Sheshikala, K Seena Naik, Y Chanti and B Vijaykumar 2019 Design of an Optimized Multicast Routing Algorithm for Internet of Things International Journal of Recent Technology and Engineering (IJRTE) 8(2) 4048-4053

9. Manoj Kumar Swain, Santosh Kumar Mallick and Rati Ranjan Sabat 2015 Smart Saline Level Indicatorcum Controller International Journal of Application or Innovation in Engineering & Management (IJAIEM) 4(3) 299-301
10. C C Gavimath, Krishnamurthy Bhat, C L Chayalakshmi, R S Hooli and B E Ravishankera 2012 Design and development of versatile saline flow rate measuring device and GSM based remote monitoring device International Journal of Pharmaceutical Applications(IJPA) 3(1) 277-281
11. P RamchandarRao, S Srinivas and E Ramesh 2019 A Report on Designing of Wireless Sensor Networks for IoT Applications International Journal of Engineering and Advanced Technology (IJEAT) 8(6S3) 2004-2009
12. P Kalaivani, T Thamaraiselvi, P Sindhuja and G Vegha 2017 Real Time ECG and Saline Level Monitoring System Using Arduino UNO Processor Asian Journal of Applied Science and Technology (AJAST) 1(2) 160-164
13. N Deepak, Ch Rajendra Prasad and S Sanjay Kumar 2018 Patient Health Monitoring using IoT International Journal of Innovative Technology and Exploring Engineering (IJITEE) 8(2S2) 454-457 [10]
14. Pooja Kanase and Sneha Gaikwad 2016 Smart Hospitals Using Internet of Things(IoT) International Research Journal of Engineering and Technology (IRJET) 3(3) 1735-1737