Review 2 Smart Saline

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ABSTRACT - Almost in all of the hospital, a nurse or caretaker is responsible for monitoring the saline level continuously without any interruptions. Due to the negligence and inattentiveness towards saline completion by doctors, nurses or caretaker of the patients and lack of nurses with sufficient skills in hospitals and their excessive workload, a huge number of patients are dying and are being harmed in the hospitals. We proposed system is built using Internet of Things (IoT) platform. The proposed system comprises of sensors which will act as a level sensor for monitoring the critical level of the saline in the saline bottle.

Key Words*: *Artificial Intelligence, Eplant, Machine Learning, Internet Of Things, Sensors.

INTRODUCTION

Due to the advancement in technology, the progress in medical field is rapid. A reason behind this is nothing but the combination of medical and engineering disciplines. When the Normal Saline (NS) is to be placed intravenously then it is called as sterile. Normal saline is generally referred as sterile solution of sodium chloride (Nacl) in water.

Generally, in hospitals saline level is monitored by nurses and patients relatives. There is always a need to check the saline level after certain time.

PROBLEM DEFINITION

To provide cost effective, reliable and automatic saline flow monitoring system which can be easily implemented in any hospital and can be easy for doctors as well as nurses to monitor the saline flow from a distance.

PROJECT SCOPE

- To reduce manpower.
- Our proposed system will automate the application of Saline monitoring.

User Classes and Characteristics

- Hardware Embedding.
- Extract Values.
- Match Thresholding
- Database Extraction
- Alert Generation.

Operating Environment

- As system is implemented in Visual Studio So, System will work on all windows versions OS.

Design and Implementation Constraints

- Requirements specification for a software system is a complete description of the behavior of a system to be developed and may include a set of use cases that describe interactions the users will have with the software. In addition it also contains non-functional requirements. Non-functional requirements impose constraints on the design or implementation (such as performance engineering requirements, quality standards, or design constraints).

Literature Survey:

1. 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

Traditional methods used for health care are becoming obsolete due to increase in population. Current health care system requires manual care takers and their heavy duties which is very time consuming job. Innovative health monitoring systems are required with less human intervention which will be available at low cost in rural as well as urban areas. Engineering technologies are getting coupled with medical field to solve this problem. So phisticated health monitoring systems are getting developed with the help of electronic components such as sensors, PLC, microcontrollers etc. with easy interfacing. This paper mainly focuses on providing advanced saline level monitoring system. [1]

2. 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 harmaceutical

Applications Vol 3, Issue 1, 2012. As the world population grows, the need for health care increases. In recent years, progress in medical care has been rapid due to the advancements in the field of sensors, microcontrollers and computers. A major reason 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 a low cost indigenous sly developed sensor and GSM (Global system for mobile communication) modem. This enables the doctor or nurse on duty to monitor the saline flow rate from a distance. The 8051 microcontroller is used for providing coordination action. An IR 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 faithful. The output obtained from the sensor is processed to check whether the flow rate is slow, medium or fast and the same is transmitted through GSM technology to a distant mobile cell for future actions.[2]

3. 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 The system can be used to check saline droplet of patients in each patient's bed in rural public hospital. By installing the measuring modules in all patients' beds, the system will show saline droplet status of each patient. So, nurses can accurately check saline droplet status of their patients on a computer including saline droplet statuses, saline droplet rate (drops per minute), and remaining time. The saline droplet statuses include four statuses that are Normal status (the system is working, the green light is shown on monitor), Warning status (sensor at critical point cannot detect saline, the yellow light is shown on monitor), Error status (droplet sensor cannot detect saline droplet, the red light is shown on monitor), and Chang New Bag (the blue light is shown on monitor). So, nurses do not need to go to patient's bed every time because they can check saline drop let status of each patient via this system. This system is a low-cost system and comfortable for a nurses. Therefore, in rural public hospital can use this system in common patient's room.[3]

4. 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 . The epidemic growth of wireless technology and mobile services in this epoch is creating a great impact on our life style. Some early efforts have been taken to utilize these technologies in medical industry. In this field, ECG sensor based advanced wireless patient monitoring system concept is a new innovative idea. This system aims to provide health care to the patient. We have sensed the patient's ECG through 3 lead electrode system via AD8232 which amplifies minor and small bio-signals to the arduino which processes them, along with saline level. Saline level is detected through IR sensors. The output of the electrical pulse is shown with the serial monitor. The saline level is indicated by LCD. The major output ECG analog signal is displayed on serial plotter. The outputs are displayed through mobile application.[4]

5. 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. During recent years due to the technological advancements many sophisticated techniques has been evolved for assuring fast recovery of the patients in hospitals .For good patient care in hospitals, assessment and management of patient's fluid and electrolyte need is the most fundamental thing required. All most in all hospital, an assist/nurse is responsible for monitoring the fluid level continuously. But unfortunately during most of the time, the observer may forget to change the saline bottle at correct time due to their busy schedule. This may leads to several problems to the patients such as backflow of blood, blood loss etc. To overcome this critical situation, a low cost RF based automatic alerting and indicating device is proposed .Where IR sensor is used as a level sensor. It is based on the principle that the IR sensor output voltage level changes when intravenous fluid level is below certain limit. [5]

System Features

- Hardware Embedding.
- Extract Values.
- Match Thresholding
- Database Extraction
- Alert Generation

External Interface Requirements

User Interfaces

System GUI and Hardware will be the user interface.

Hardware Requirements

Processor: Core 2 Duo or more with speed 2 GHz Ram: 2GB or more

Hard Disk: 500 GB

Software Resources Required

Operating System: Windows95/98/XP/VISTA/7/8/9/10. Technology: Visual Studio

Communication Interfaces

GUI and SMS alerts will be our communication interface.

Nonfunctional Requirements

Performance requirements for proposed system are as follows

- System will perform if proper database is been provided.
- Will result better if it has proper hardware components are been used.

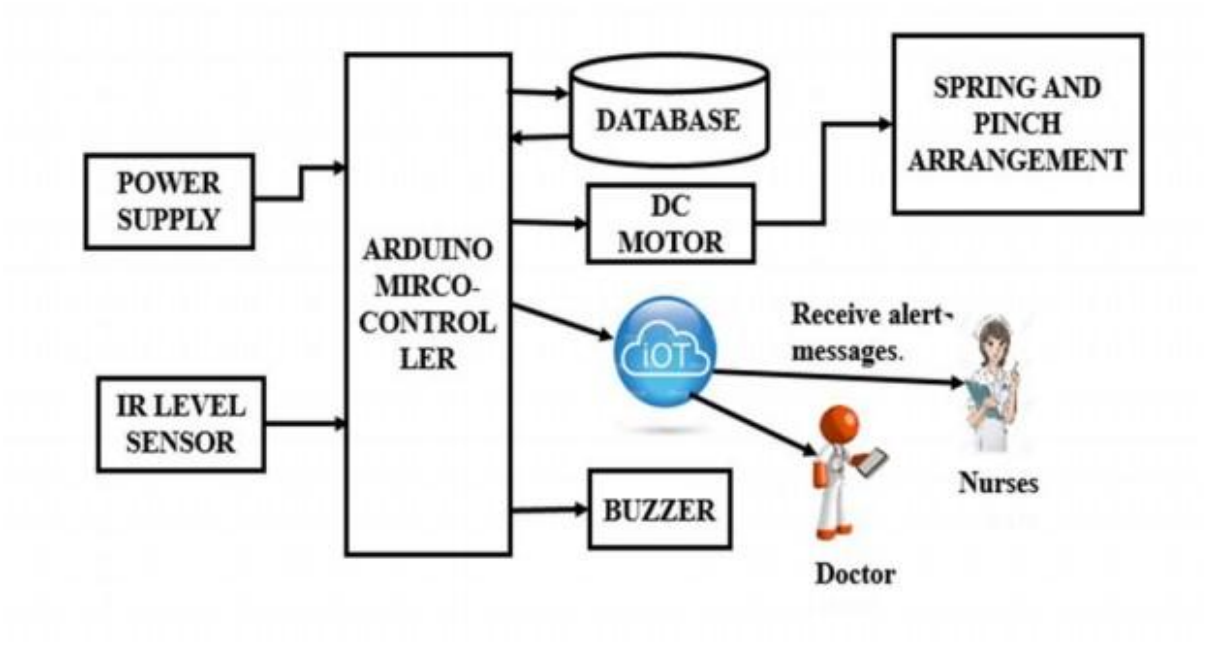
Safety requirements

- No safety requirements is been needed as our system is purely software oriented

Security requirements,

- We are using login authentication methods for data privacy.

4.1 System Architecture



Initially, this might be inferred as a casual phenomenon. But the consequences are often fatal. Just after the saline finishes, blood rushes back to the saline bottle due to difference in blood pressure and pressure in the empty bottle. Thus, Innovative health monitoring systems have being developed with less human intervention which will be available at low cost in rural as well as urban areas. The proposed system aims at trouble-shooting the above mentioned problem effectively .By means of this the nurse can monitor the amount of saline even n the control room. An automatic saline level monitoring consists of Level sensors which are used to determine the status of liquid in the bottle whether it is normal or warning status. The detection of saline drop rate is quite faithful. The output obtained from the sensor is processed to check whether the saline bottle is empty. When the level of saline dips below a certain level, the alarm sound will be produced.

Conclusion:

In this proposes system which can automatically monitor the saline flow rate by using microcontroller. It can wirelessly send the data to nurses or doctors computer and display the results in the form of saline droplet rate, number of droplets coming from saline bottle, saline solution given to the patient in ml and remaining time to empty the saline bottle with the help of serial port test software. The system is reliable, cost effective and convenient for nurses. It can be reused for the next saline bottle. It is beneficial for nurses as well as doctors at rural hospitals. Nurses can easily monitor the saline level from distance. It is mainly advantageous at night

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