

IoT Based Saline Level Monitoring and Automatic Alert System

Prof. B. S. Ganguly¹, Rushikesh Nimje², Kshitij Lamsoge³, Ritik Selukar⁴, Rahul Nimsatkar⁵

Assistant Professor, Department of Computer Science Engineering¹

Students, Department of Computer Science Engineering^{2,3,4,5}

Rajiv Gandhi College of Engineering, Research and Technology, Chandrapur, Maharashtra, India.

Abstract: *Internet of Things (IoT) and Load Cell technology for real-time monitoring of saline solution levels. The system aims to provide an automated and accurate method for monitoring saline levels, enhancing patient safety and optimizing resource utilization in healthcare settings. The components used in the system include ESP8266, load cell, I2C module, battery, 16x2 display, Blynk app, and HX711 sensor etc.*

The manual monitoring of saline levels in healthcare facilities can be time-consuming, prone to errors, and inefficient. The proposed system addresses these challenges by leveraging IoT and Load Cell technology. The load cell measures the weight of the saline container, while the HX711 sensor amplifies and digitizes these readings. The ESP8266 microcontroller reads the digital values from the load cell and communicates with other components through the I2C module.

The real-time monitoring and control of the system are facilitated by the Blynk app, which allows healthcare professionals to remotely access the system from their smartphones or other devices. The Blynk app displays the real-time saline level readings on a 16x2 display, providing instant visibility into the status of saline solution levels. Additionally, the app can be configured to send alerts or notifications when the levels go below or above predefined thresholds, enabling prompt intervention.

The Saline Monitoring System offers several advantages in healthcare settings. Firstly, it ensures accurate and reliable monitoring of saline levels, minimizing the risk of saline shortages or overflows. This improves patient safety by ensuring the availability of the necessary saline solution for medical procedures and reduces the potential for adverse effects due to incorrect concentrations. Secondly, the system optimizes resource utilization by providing real-time data on saline levels, allowing healthcare facilities to efficiently manage their inventory and plan for timely refills or replacements. This helps prevent unnecessary waste or delays in patient care.

The integration of IoT and Load Cell technology in saline monitoring demonstrates the potential for automation and digitization in healthcare processes. The proposed system can serve as a foundation for further advancements, such as integrating additional sensors for temperature and humidity monitoring or implementing predictive analytics algorithms to anticipate saline level fluctuations.

Keywords: Saline Monitoring System, IoT, Load Cell technology, real-time monitoring, patient safety, resource utilization, automation, digitization

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