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IOT Based Glucose Bottle Level Measurements and Patient Monitoring System

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ABSTRACT: Today's rapid growth of elderly populations and aging problems coupled with the prevalence of obstructive and other health related issues have affected many aspects of society. This has led to high demands for a more robust healthcare monitoring and treatments facilities. Patient tracking structures is the time period for all the numerous gadgets that are used to supervise sufferers. One category of such devices is devices that indicators if the affected person gets right into a critical state. In our proposed method focuses on to monitor and initiate alert to doctors approximately the sufferers at some points of fluid journey injections. The proposed system comprises of sensors which will act as a level sensor for monitoring the critical level of the fluid in the fluid bottle. Whenever the level of the fluid reaches to the pre-defined critical level, then the nurses, caretaker, doctors will be alerted through the buzzer .This proposed system can be utilized efficiently in homes as well as hospital

KEYWORDS: ARDUINO UNO, LOAD CELL, HEART BEAT SENSOR, BLOOD OXYGEN SENSOR, GYRO SENSOR

I.INTRODUCTION

The number of infant deaths occurs due to improper care taken. Mothers with newly born baby have to stay away from their babies due to various reasons. During such situation, health status of babies is hard to detect. The sudden fall and increase in physiological parameters may cause sudden infants deaths syndrome (SIDS) and may lead to Apparently Life Threatening Events. The aim of the project is to incorporate sensory functions in the wearable hardware making it capable of measuring the physiological parameters (breathing and heart beats) accomplishing the need of continuous health monitoring. The microcontroller based hardware includes integrated sensors for the parameters heart rate, breathing rate and position sensor.

It will notify for the potential life threatening events, also recognize the development of any disease. The hardware will be able to output the analogue values of sensed data which in turn will be synchronized with cloud server via middleware architecture. Wearable hardware will communicate with middleware architecture through wireless communication. The necessary data processing on the cloud storage will identify the critical conditions as well as will create reports. The final component of the system, i.e. mobile application is featured with real-time notification, alerts in the critical situation. It will show the continuous health status.

II.PROBLEM IDENTIFICATION

In this existing system fluid flow rate measuring system with ZigBee based remote monitoring device was implemented. In this device an indigenously developed sensor is attached to the neck of the drips bottle. The 8051 microcontroller is used to measure the flow rate. Through GSM technology the information about the flow rate is send to the observer's mobile.

FLAWS:

- The cost of this device is high
- Very difficult to operate and understand.

III.INTENDED

Proposes a glucose bottle level and patients monitoring system. In the system, by using the weight (load cell), the level of liquid present in the bottle can be calculated so that when the liquid reaches its minimum level. This system

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integrated with the sensors like temperature sensor and accelerometer for measuring temperature condition and position of patient. The measured sensor details are display on LCD. When this system measures the abnormality condition, it indicates through the buzzer. Patient health details are uploaded to web-server through IOT device.

IV.BLOCK DIAGRAM

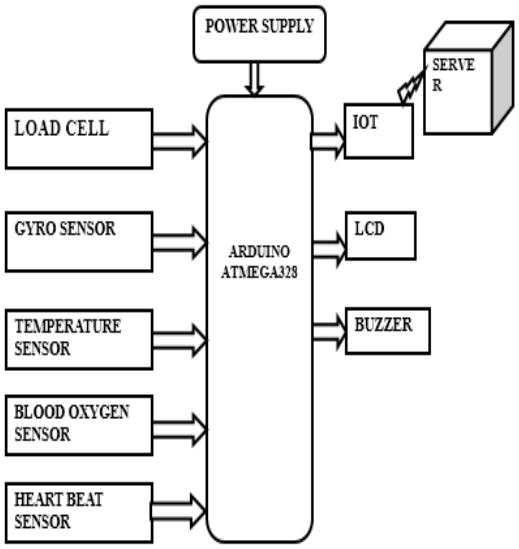

Fig 5.1

V.CIRCUIT DIAGRAM

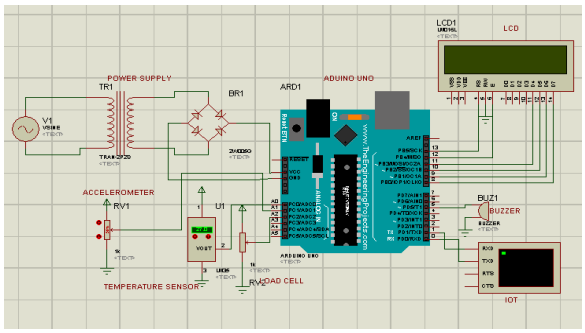

Fig 6.1

VI.BENEFITS

- Provide cost effective and automatic fluid level monitoring which can be effortlessly implemented in any hospital.
- Avoid harms cause to patient health due to negligence towards fluid completion and high accuracy.
- Inform the doctor/nurse spontaneously for patient safety.
- everybody known health details using android app

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VII.ELEMENT

7.1SOFTWARE COMPONTS

- The Arduino IDE

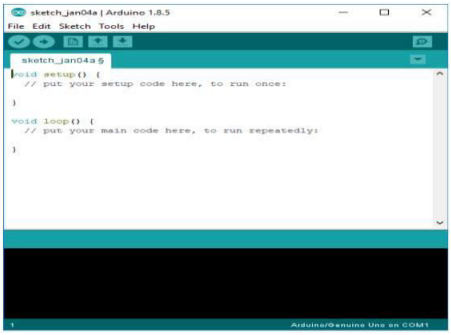

Fig 8.1.1

7.2HARDWARE COMPONENTS

- Arduino UNO
- PINS general pin location
- Power supply
- Linear power supply
- Transformer
- Bridge rectifier
- Regulator
- Accelerometer
- Temperature sensor
- Node MCU
- Liquid crystal display
- Buzzer
- Spo2 sensor
- Gyro sensor ADXL335
- Load cell

VIII. RESULT

- The IV Drip Monitoring and Controlling System is designed and tested successfully.
- The system is designed to capture the changes in the level of saline bottle and determine the level of saline bottle. When the determined level is less than predefined threshold weight, then the buzzer sounds to notify the nursing staff.
- By providing real-time glucose level and patient vital sign monitoring, IoT-based monitoring systems can help healthcare providers make informed decisions about the patient's treatment plan, leading to improved health outcomes.
- IoT-based monitoring systems can send alerts to patients and healthcare providers in case of emergency situations or if the patient's condition deteriorates, allowing for timely interventions.

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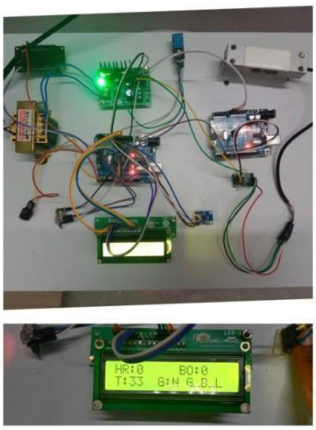

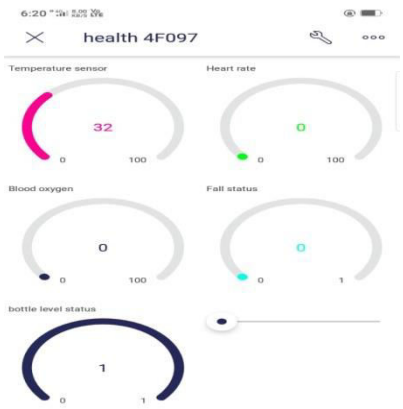

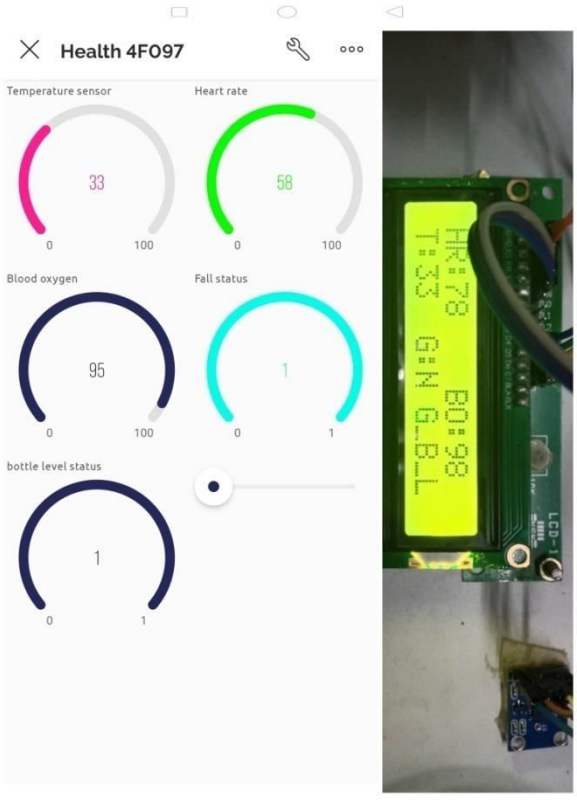

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IX. CONCLUSION

In conclusion, an IoT-based glucose bottle level and patient monitoring system is a promising solution to improve the management of diabetes. The system can provide real-time glucose level monitoring, wearable device monitoring of vital signs, and data analysis in a cloud-based platform accessible to healthcare professionals. By enabling remote monitoring and early intervention, the system can reduce the risk of complications, enhance patient outcomes. Moreover, the system can help healthcare professionals in providing timely interventions and personalized care for patients, which can lead to better health outcomes and improved quality of life. With the increasing prevalence of diabetes worldwide, an IoT-based glucose bottle level and patient monitoring system can be a valuable tool for healthcare providers and patients alike.

This paper presented a real-time remote IoT-based continuous glucose monitoring system and detects whether the patient is finding difficulty in breathing or not so that it is helpful in detecting and monitoring health condition. The implemented IoT-based architecture is complete system starting from sensor node to a back-end server. Through the system, doctors and caregivers can easily monitor their patient anytime, anywhere via a browser or a smart-phone application. Sensor nodes of the system are able to obtain several types of data (i.e. Glucose Bottle Level, Heart Beat, body temperature and position) and transmit the data wirelessly to the gateway efficiently in term of energy consumption.

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