

Water Level Monitoring System

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Abstract:

One of the major problems faced by most of the countries is the issue of water wastage during transmission has been identified as a major culprit; this is one of the motivations for this research, to deploy computing techniques in creating a barrier to wastage in order to not only provide more financial gains and help the environment as well as the water cycle which in turn ensures that we save water for our future. IOT based Water Level Monitoring system is an innovative system which will inform the users about the level of liquid and will prevent it from overflowing. To demonstrate this the system makes use of containers, where the ultrasonic sensors placed over the containers to detect the liquid level and compare it with the container's depth. The system makes use of AVR family microcontroller, Raspberry Pi, LCD screen, Wi-Fi modem for sending data and a buzzer. A 12 V transformer is used for power supply in this system. The LCD screen is used to display the status of the level of liquid in the containers. The liquid level is highlighted as colored to show the level of liquid present in the container with the help of a web page to the user. The buzzer starts ringing when the set limit of the liquid is crossed. Thus this system helps to prevent the wastage of water by informing about the liquid levels of the containers.

KEYWORDS: Automatic, Ultrasonic sensor, IOT, NODE mcuESP8266

1. INTRODUCTION

With India's population crossing 1.5 billion in 2019, a balance between the optimum population growth and a healthy nation is far to be achieved. Between 1947 and 1967 India gone through the Green Revolution, resulting in a huge increase in agricultural production, making India one of the world's biggest exporters of grain. Unfortunately, this huge surge in agriculture requires significant water resources for irrigation. This paper focuses mainly on reducing the wastage of water .It is providing an alternative to a primitive method of irrigation in which an alarm intimates a farmer when water reaches a certain level of the tank. The farmer then shuts off the alarm manually and closes the water inlet to stop the supply. Water leakage from the tank or a damaged alarm can result in the wastage of a valuable resource. The NODE mcu ESP8266 controls the digital connection and interaction between objects in the proposed system, enabling the objects to sense and act. The Arduino Integrated Development Environment connects to the node mcu to upload programs and communicate. In the proposed system, sensors detect the level of water and send readings to a fixed access point, such as a personal computer,

which in turn can access irrigation modules installed in the field or the physical module in the water tank, wirelessly over the internet.

2. LITERATURE SURVEY

•Automatic Water Level Controller with Short Messaging Service (SMS) Notification (International Journal of Scientific and Research Publications, Volume 4, Issue 9, September 2014)

This research paper by SanamPudasaini, Anuj Pathak, SukirtiDhakal, Milan Paudel presents a system of an automatic water level controller with SMS notification. SMS notification was added to automatic controller system so that water can be managed by user during load shedding. Two systems work synergistically; automatic level controller system and SMS system.

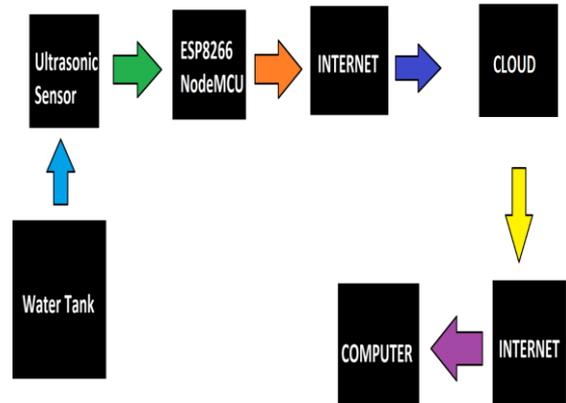
•Design and Development of Automatic Water Flow Meter(International Journal of Computer Science, Engineering and Applications (IJCSA) Vol.3, No.3, June 2013)

This research paper by RiaSood, Manjit Kaur, HemantLenkaemphasis on the need of water level controller in irrigation in agriculture. It says that every crop requires require different amount of water and this can be done by using automatic water level controller which will also help in reducing wastage of water.

- [1] This paper deals with brief explanation of using arduino to automate the homes. The existing system of the Bluetooth method of automation limitations was analyzed to prove that android and arduino make up for a better method of automation. The hardware and software specifications are also explained.
- [2] A prototype for Water Level Monitoring is developed for detecting water level through the internet. A central device like microprocessor connects to the internet and receives orders to control sensors. A server manages the users and devices. Android Application acts as a front-end to interact.
- [3] The cloud is a platform that connects things around us so that one can access any device anywhere in a user-friendly manner.
- [4] The proposed system has two operational modes. i) manually–automated mode in

which the user can monitor and control the home appliances from anywhere in the world using the cellular phone through Wi-Fi communication technology. ii) self-automated mode that makes the controllers be capable of monitoring and controlling different appliances in the home .

3. BLOCK DIAGRAM

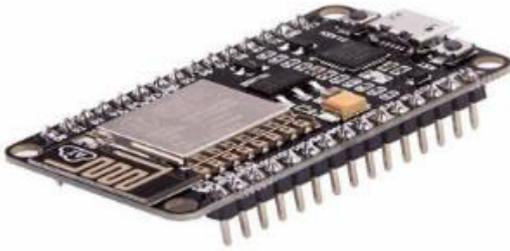


3.1 Ultrasonic Sensor :An ultrasonic sensor transmits ultrasonic waves into the air and detects reflected waves from an object. There are many applications for ultrasonic sensors, such as in intruder alarm systems, automatic door openers and backup automobile The ultrasonic sensor works on following formula

$$distance = \frac{speed\ of\ sound \times time\ taken}{2}$$



3.2 Node MCU : This module comes with a built in USB connector and a rich assortment of pin-outs. With a micro USB cable, you can connect NodeMCUESP8266 to your laptop and flash it without any trouble, just like Arduino.



4. SNAPSHOT OF OUR PROJECT



5. H/W & S/W REQUIREMENTS

- NodeMCU ESP8266 development board
- HCSR04 ultrasonic sensor
- Breadboard
- LM7805 +5V voltage regulator IC.
- Battery (9V-12V).
- MIT app inventor 2 (to create android application)

Software requirements definition is an abstract description of the services, that the system should provide, and constraints under which the system

must operate. Operating system: WINDOWS IDE:
Coding language: python ,arduino IDE software.

6. CONCLUSION

The Internet has changed the dimensions of life involving virtual interaction. IOT has the potential to add new dimensions enabling smarter objects communications. The project proposes a simple water level monitoring system with different levels indicated. It also signifies when the water level is below and above then the requirement.

- System design and architecture is as discussed, thus being a cost-effective and simple strategy to monitor the water level system.
- This system is very beneficial in rural as well as urban areas.
- It helps in the efficient utilization of available water sources.

5. FUTURE SCOPE

- Automatic water level monitoring system has a good scope in future especially for agriculture sector. There are any areas where we need water level controller. It could be agricultural fields, overhead tanks.
- We can also include the GSM-based system where the message will be sent to the particular authorized person when the water level is below the required level.

REFERENCES

1. Ria Sood, Manjit Kaur, Hemant Lenka, "DESIGN AND DEVELOPMENT OF AUTOMATIC WATER FLOWMETER", Mohali, India
2. Sanam Pudasaini, Anuj Pathak, Sukirti Dhakal, Milan Paudel, "AUTOMATIC WATER LEVEL CONTROLLER WITH SHORT MESSAGING SERVICE (SMS) Notification", Kathmandu University, Nepal
3. Pankajshukla, Shaishavshaah, viditatilva, "WATER LEVEL CONTROL WITH SPOKEN MESSAGE", Ahmedabad, Gujarat, India.

4. Neena Mani, Sudheesh T.P, Vinu Joseph, Titto V.D, Shamnas P.S,” Design and Implementation of a Fully Automated Water Level Indicator”, Kothamangalam, India.

5. <https://www.biz4intellia.com/level-monitoring-solution/> Mansarovar Plaza, Madhyam Jaipur, Rajasthan .