International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 05 Issue: 04 | Apr-2018 www.irjet.net p-ISSN: 2395-0072

Automated Water Level Monitoring and Data Collection System at Centralize Location

Nahatkar S. C.[1], Deore Rajashri[2], Amrutkar Priyanka[3], Deore Chandrakant[4]

[1]*Professor, Dept. of Electronics and Telecommunication Engineering, RCPIT College Shirpur, Maharashtra, India*
[2,3,4] *Dept. of Electronics and Telecommunication Engineering, RCPIT College Shirpur, Maharashtra, India*

Abstract -*Now a days Level Measurements of Dam is done manually and there by volume measurement too. But there are lots of errors in manual method, like level is measure by just observation of scale which is drawn on column of Dam. Which is inefficient method of flood indication. Data collection is also manual so we are trying to develop such a system which can measure the water level automatically and collect the data on web server for future analysis purpose, as well as it will help to farmers about flood and nearby area peoples so that they can change their location.*

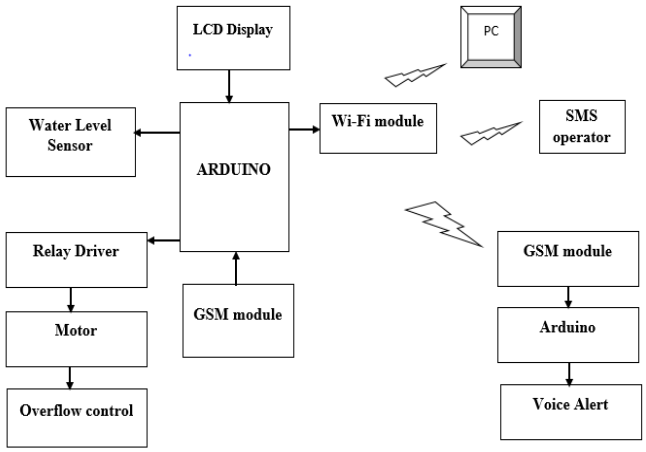
In this project we are using a water level sensor which will give level of water. And that level will continuously store on web server by Wi-Fi module as data for future analysis. We are controlling motor by GSM which will throw water out of dam when overflows as well as it will also operate voice announcement system fitted at central position of village. And one alert is send to operator who is taking care of dam. This system will really helpful to society.

***Key Words*:Arduino Uno, GSM module, Wi-Fi module, motor, voice recorder module.**

1. INTRODUCTION

This project is designed for developing a system that efficiently manage overflow of water and voice control alert in nearby areas. A system comprising of an Arduino, water-level sensor and GSM module, voice recorder circuitry is physically installed on the dam and centralize location of village. The system sends an SMS to the operator when it finds the water-level is rising above the predefined secured level. The system sends an SMS alert motor control system, motor will start and throw water out of dam. . Another use of this system is to alert about flood to nearby peoples as well as to farmers so that they can change their location. The Wi-Fi module is used to store and observe level of dam on web server; it will helpful to researcher for analysis on dam.

2. Block Diagram



2.1 Description of Diagram

Water level sensor is interface with Arduino. As well as LCD display, relay driver, Wi-Fi module, GSM all are interfaced with Arduino to control the system.

Objectives of system:

1. To control the overflow of dam.
2. Send alert to operator.
3. Collect data on web server.
4. To announce voice alert to nearby village.

2.2 Arduino

Arduino is used as controller for whole system in this project. Two Arduino are used one is in dam section and another is in voice announcement system. Arduino is very much popular controller now a days.

- Atmega328 microcontroller is used for controlling actions.
- 14 digital I/O pins out of which 6 are used as PWM output.
- Flash memory is of 32 KB (ATmega328) of which 0.5 KB used by boot loader.
- Requires 16 MHz clock frequency.
- 2KB of SRAM and 1KB of EEPROM.

2.3 GSM Module

GSM stand for Global System for Mobile Communication. It has SIM support as like mobile so that we can communicate between mobile and GSM module. In this project we have use GSM900 SIM to send message to operator, to control overflow through motor and for voice announcement alert system.

- Quad Band GSM/GPRS : 850 / 900 / 1800 / 1900 MHz
- SMA (Subminiature version A) connector with GSM L Type Antenna
- Built in SIM (Subscriber Identity Module) Card holder
- Built in RS232 to TTL or vice versa Logic Converter (MAX232)

2.4 Voice Recorder Module

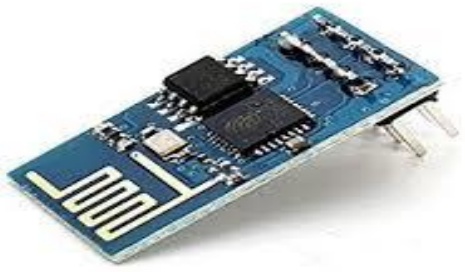
Voice recorder module is used to record and playback whatever we have recorded at given condition. There are 7 channels are provided to record 7 different voice. Controller is used in this module to perform particular controlling action. In our project we have used this module to record alert sound and play it according to condition.

2.5 LCD Display

We used the 16X2 LCD display to display the water level and water quantity of the dam. The 16X2 LCD display means there is 16 columns and 2 rows to display the information and LCD display has 16 pin. LCD is used for real time display of data acquired from the ultrasonic sensor and the status of the water quantity and water level of dam. When water reaches at different levels Arduino Uno updates it on the LCD.

2.6 WI-FI Module

We used the WI-FI module ESP8266 to collect the data at web server. Wi-Fi module serially communicate with the web server through the TCP/IP protocol. The status of the water quantity and water level of dam are updates on the web server continuously.



- WI-FI module has 802.11 b/g/n protocol
- WI-FI module has Integrated TCP/IP protocol stack

- Wi-Fi Direct allows two devices to establish a direct Wi-Fi connection without requiring a wireless router.
- WI-FI module has regulators, and power management units
- WI-FI ESP8266 has Universal Asynchronous Receiver/ Transmitter for serial communication.

3. ADVANTAGES

- To display he data at centralize location.
- The data will be store for permanent which may useful for further research.
- Flood indication to nearby peoples.

4. DISADVANTAGES

- Our system is not water proof.

5. APPLICATION

- Dams.
- Agriculture lands.
- Research purpose.

6. RESULT

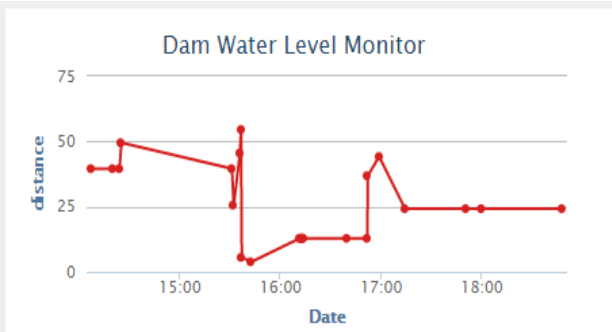


Chart -1: Distance in cm

Above graph shows distance in centimeters as level of water increase distance from top of dam increases.

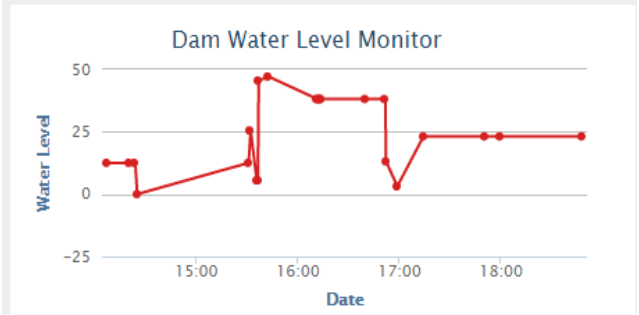


Chart -2: Water in liter.

In graph as per level of water it shows water quantity in liter.

7. CONCLUSION

Water is one of the most basic need for all living being. But unfortunately a huge amount of water is being wasted by uncontrolled use. Some other automated water level monitoring system is also offered so far but most of the method has some shortness in practice. We try to overcome these problems and implemented an efficient automated water level monitoring and controlling system. Our intension of this research work was toestablish a flexible economical and easy configurable system which can solve our water losing problem. This propose automated mechanism of water level monitor, control and alerting system using GSM, sensor, Arduino Uno in dams ensure efficient us of available water resources and generates more precise an accurate results which is best method to overcome manual judgment. There is no requirement of human operator to monitoring the level, by this project automatic monitoring is happened.

5. REFERENCE

[1] T. S. Yuvarani, R. Archana, "Water Level Monitor, and Alerting System Using GSM In Dams and Irrigation System based on Season", International Journal of Scientific & Engineering Research Volume 7, Issue 4,April-2016,ISSN 2229-5518

[2] Ejiofor Virginia Ebere (PhD) ,Oladipo Onaolapo Francisca (PhD)"Microcontroller based Automatic Water level Control System"International Journal of Innovative Research in Computer and Communication Engineering (An ISO 3297: 2007 Certified Organization) Vol. 1, Issue 6, August 2013.

[3] S. M. Khaled Reza., Shah Ahsanuzzaman Md. Tariq., and S.M. Mohsin Reza., "Microcontroller Based Automated Water Level Sensing and Controlling: Design and Implementation Issue", Proceedings of the World Congress on Engineering and Computer Science, Vol 1, pp.1-7, 2010.

[4] Yan Xijun., Lu Limei., and Xu Lizhong., "The Application of Wireless Sensor Network In the Irrigation Area Automatic System", International Conference on Networks Security, Wireless Communications and Trusted Computing, Vol.1, pp.21-24, 2009.