

Internet of Things Based Flood Monitoring and Alerting System

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Abstract— Nowadays, the nature balance is totally change, we have lots of example of natural and also some manmade disaster. In which most disaster which totally destroy the human and natural resources is Flood. We have lots of example of flood like kerala, kedarnath and so on. government also spend lots of money for that to recover it. so here is we need some quick alerting system. to take early action on it. as a solution this paper is publish to not only detect water level also rain sensor is inbuilt. Using this we alert the city or village which affected by flood. This IOT project help us to stop destroy of human and natural resources. We can't stop this but we can implement some technology to help at least human lifestyle. In which some sensor are inbuilt that detect and send email, msg and after that it monitor by many disaster community.

Keywords: Internet of Things, Flood Monitoring and Alerting System, Arduino Uno

I. INTRODUCTION

Everywhere natural disaster is happening all over world and the can be completely destroy the human and natural and also impact on economy of country. Flooding means what increase in level of water system like river, lake and also in dams. In Mumbai also 2005 we experience a lot.

In flood, they consist of bacteria and sewage sometimes harmful chemicals also involve it causes different types of diseases and sometimes we don't know about the seriousness and flow of flood for this we need some alerting and monitoring system. To measure the length and intensity and areal extent. In this system, we use some sensors to predict flood and alert the area which will affect by flood. And for alerting sound alarm are inbuilt nearest the area to take action easily. Water sensor to measure the level of water and also rain sensor to measure how much rain is in that area and some sensor for give some information of flood. System detect the seriousness of flood and give information and alert that area. Then those people instantly transport to other area and we will save their life and also many disaster management and NGO working on it we send them email by system and they help them to settle down, for them this project is helpful.

II. CHALLENGES

In India, especially in costal region are a constant problem during cyclones and monsoon seasons. The most challenging part is we inbuilt some sensors that connection of those sensor across the river bed. We need some technology which easily flexible and Interoperability and also easily detect that so we will early take action on it. So overcome that we will use IOT technology.

- 1) Flexibility : different scenarios are easily adapt
- 2) data source easily integrate

III. APPROACH

A. Hardware Implementations

The design of system is basically depends on hardware components. This project main part is Arduino and some sensors, wires for connection and connected to wifi module to send email and messages. Sensor is for to collect the actual data of the environment. The sensor nodes are connected to Arduino uno and prommaged according to system to transmit the information.

The main hardware components are Arduino uno, water level sensor and rain sensor

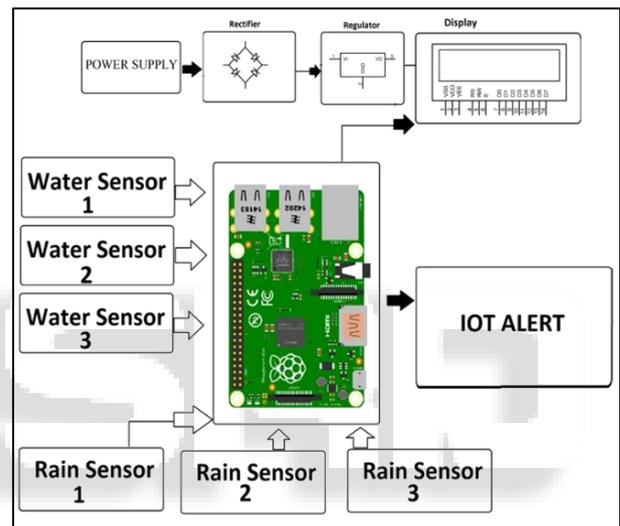


Fig. 1: Block diagram

1) Arduino uno:

ATMEGA328P is use basically to implement coding in it and connect sensors and modules to it for working

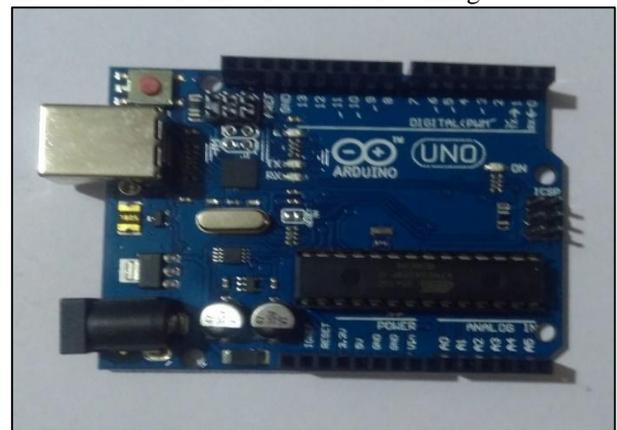


Fig. 2: Arduino uno

2) Water Level Sensor

Water level sensor to detect the water level of flood in rivers and dams so it send message and of water level to alert those area.



Fig. 3: water level sensor

3) *Rain Level Sensor:*

The seriousness of rain will detect from this sensor it measures the rain quantity and also alerting done by this sensor which predict the seriousness of flood via rain level sensor.

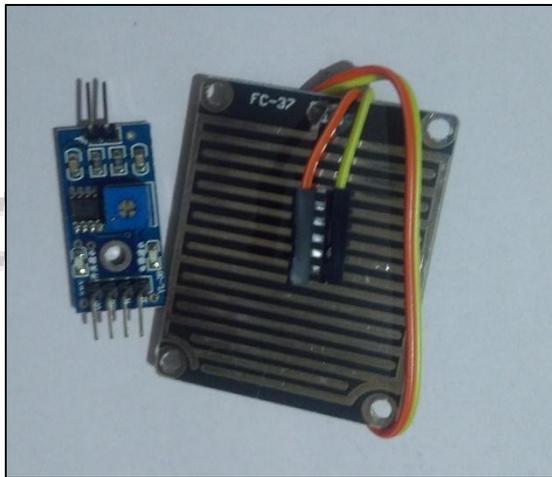


Fig. 4: Rain level sensor

4) *Others Hardware:*

Other hardware like microcontroller ATmega32, breadboard for connection, display for displaying the flood measurement and wifi module to connect to the management and NGO's via email and messages, wires for connections and alarm when water level and rain level cross their limitation buzzer alarm module is introduced.

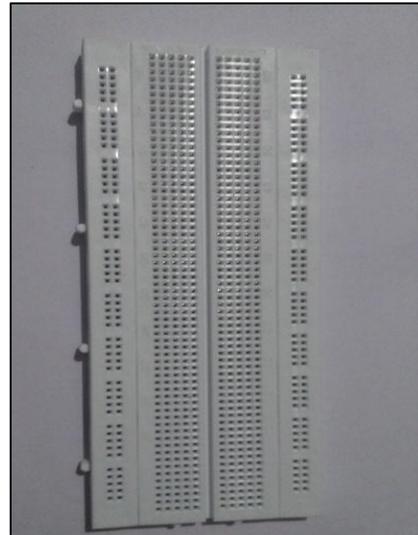


Fig. 6: Breadboard



Fig. 7: Display

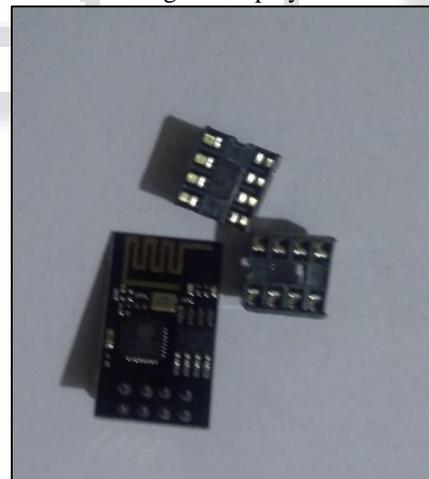


Fig. 8: wifi module

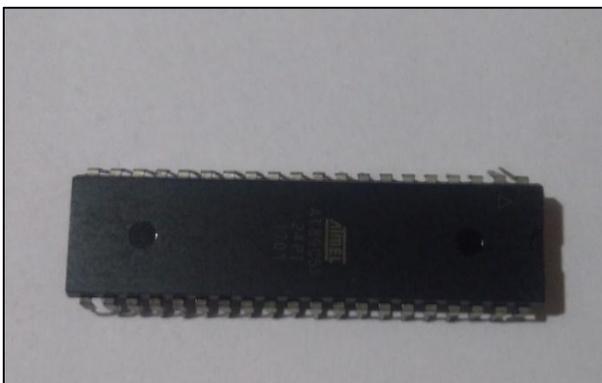


Fig. 5: microcontroller



Fig. 9: wires

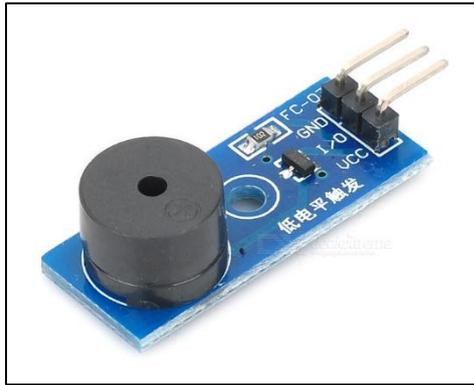


Fig. 10: buzzer alarm

5) Final Project

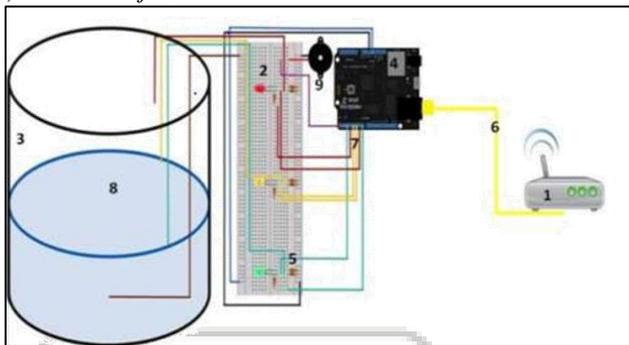


Fig. 11: Final project

B. Software Implementation:

In Arduino uno, coding part is done by Arduino IDE using python,C++ languages and that will specify the time and process of alerting to that affected area and that management system which work on it. Sensor that read data and indicate to those system about flood.

IV. RESULTS

Results will be display in tabular format and send the water level and rain level to department and management through emails and they will do work according to it Eg.

Sensor 1			Sensor 2		
Manual	System	Time Difference (s)	Manual	System	Time Difference (s)
9:31:52	9:31:54	0:00:02	9:35:04	9:35:07	0:00:03
9:39:53	9:39:55	0:00:02	9:42:56	9:42:59	0:00:03
9:48:17	9:48:17	0:00:00	9:51:23	9:51:26	0:00:03
9:55:52	9:55:53	0:00:01	9:59:12	9:59:14	0:00:02
10:03:13	10:03:16	0:00:03	10:06:14	10:06:14	0:00:00
:	:	:	:	:	:
:	:	:	:	:	:
1:23:29	1:23:30	0:00:01	1:26:40	1:26:42	0:00:02
Minimum		0:00:00	Minimum		0:00:00
Maximum		0:00:02	Maximum		0:00:06
Average		0:00:08	Average		0:00:02

Fig. 12: timer table

V. FUTURE WORK

In future work, we implemented apps that use for all and detect the location of flood where is occur and also wireless technology without wire and sensor. Whole system in inbuilt in one so there is no challenges occurs when it works which safely working without any error. Also try to implement solar power supply which is not much fund needed.it gives cheaper supply of power. And also try to install the software which

gives accurate detection and measurement of flood. And that app is easily available so common man also use it easily and aware of it. we are working now on that.

VI. CONCLUSION

Basically we design that system which get the data of water level and rain level and through wifi module it sends the data to management and alert also monitor overall disaster. Still that much work is done this research paper introduce normal connectivity to that system and it basically important element in flood management system and solar, app implemented as soon as possible in future work.

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