IOT Based Flood Monitoring and Chemical Detection

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Abstract: Nowadays the natural disasters like flooding turn up extremely, and it severely affects standard of living. In this project the development of flood monitoring system using IOT to keep track of the conditions nearby the reservoir with the help of Arduino, and the compactible sensors such as level, temperature distinctly presented and here we are measuring chemicals in the water if any which can cause harm to people. Firstly, the hardware unit is placed in the flood prone areas, the GSM/GPRS act as the transmitting unit and the sensors associated with the system measures the corresponding parameters. Then all the accurately measured parameters are displayed through the LCD display and those are passed to the IOT web application. It communicates with the various sensor modules in real-time in order to monitor the wind speed, moisture, temperature efficiently. Here the data can be read through IOT to any of the remote place using Internet of things and these parameters can be passed from IOT enabled mobile phone in the form of voice guidance to make the people to be alert.

I. INTRODUCTION

Natural calamities happen everywhere in the world, and which affects the human life and economy of the country. Economy and growth of any country depends upon the agriculture; hence the proper alert makes the farmers observant to protect the crop from flooding. In order to detect and avoid flood like calamities in a timely manner, current world technology plays a vital role. We can prevent natural calamity caused by flood, with the aid of an IOT based early flood related parameter monitoring and detection system and its avoidance using the Arduino project, is proposed as a solution to the mentioned problem.

II. LITERATUTRE SURVEY

INTERNET OF THINGS BASED REAL TIME FLOOD MONITORING AND ALERT MANAGEMENT SYSTEM, 2015

The system is much useful for protecting the lives of people and animals. This system is used for monitoring of the water level, flow variations in rivers and the same can be used for measuring of the water level at Dam/ Reservoirs. The measured values are regularly updated on the web server which is useful to send flood alerts to consistent authority and people for the faster action. This consists a wireless sensor node which called as a mote and the motes are placed along the river beds to monitor water condition. Here each Node is connected with a single GSM module. All the measured parameters are processed by Raspberry pi3 which contains 64-bit ARM Cortex A53 processor. Then the processed information transmitted from corresponding node to alert management system using GPRS. Google spread sheet Application program interface (API) created and this API is used as a data logger.

AN INTELLIGENT FLOOD MONITORING SYSTEM FOR BANGLADESH USING WIRELESS SENSOR NETWORK

A neuro-fuzzy based flood alert system using WSN has been proposed. The distributed sensor nodes uses low-rate wireless personal area network to collect the water level data from the river, rainfall data, wind speed data and air pressure data from the selected area. That sensors information is sent to the distributed alert center via Arduino micro controller and the XBee Transceivers. At the distributed alert center, XBee Transceiver and a Raspberry Pi microcomputer are used to generate the flood alerts based on the sensors information that is received. Two decades flood monitoring data has been used to estimate the duration of the flood and these data are stored in a database. Intelligent NFC is created in the Raspberry Pi microcomputer which uses the sensor data to broadcast the flood alerts.

SMS BASED FLOOD MONITORING AND EARLY WARNING, 2014

This monitoring system is fast, cheaper and reliable hence it helps to prevent the loss of lives damage to properties. One problem in the system may be developed if the network provider makes changes to the network. The GSM module cannot be upgrade itself. The system is further improved by make it independent by incorporating a solar battery charging system and this can be supported by the GSM module. GSM module has a particular feature that enables it to check the battery level at any time. Since the setup will be in a remote area, the solar charging system will allows the battery to be constantly charged. The user can also check the battery status with the GSM module. The module should be able to send feedback of the battery level to the user via SMS. Further remote top-up, adding resident numbers are also incorporated to make sure that the system is fully efficient.

III.   EXISTING SYSTEM

Researchers and engineers in the world have taken various approaches to design of a flood management system. We use wireless electronic gages, with a wireless communication module capable of transmitting acquired data to the flood management dedicated server with the help of custom data queue service. This not only helps to reduce the cost of implementation, but also enhances maintainability due to the low power requirement of on-field sensor module. Through, this approach allows the sensors to be deployed at any desired locations, the system developed in this project has low power requirements, is more maintainable, and is extremely low cost. This system does not follows a multi-tiered approach which will lead to lower latency, and requires lesser resources.

IV.   PROPOSED SYSTEM

In the proposed system we are using Ultrasonic senor, DHT11 to measure the parameters like Level of water, Temperature and Humidity of the environment. Flow Sensor is to check the flow rate of the water. If any of the value exceeded message will be send to authorities using GSM and the values will be uploaded to Web Server. For finding chemicals or quality of the water we are using pH and conductivity sensors. The values are displayed on LCD and the values are uploaded to cloud server.

V.   BLOCK DIAGRAM
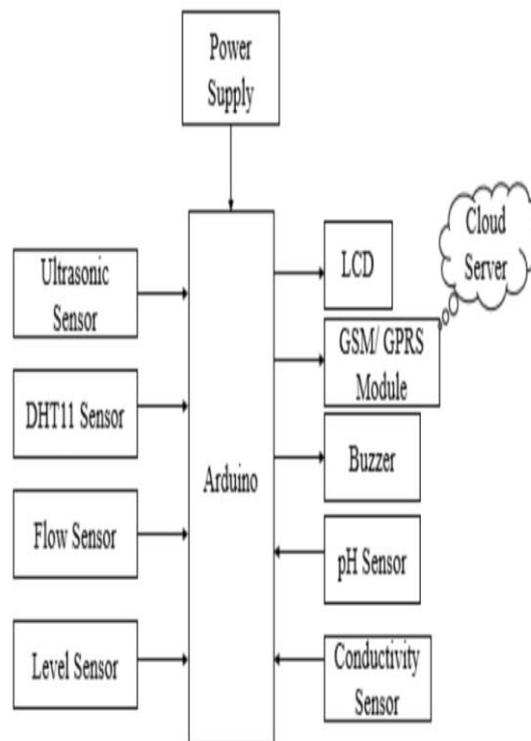
Figure 5.1: Block Diagram

VI.   RESULTS
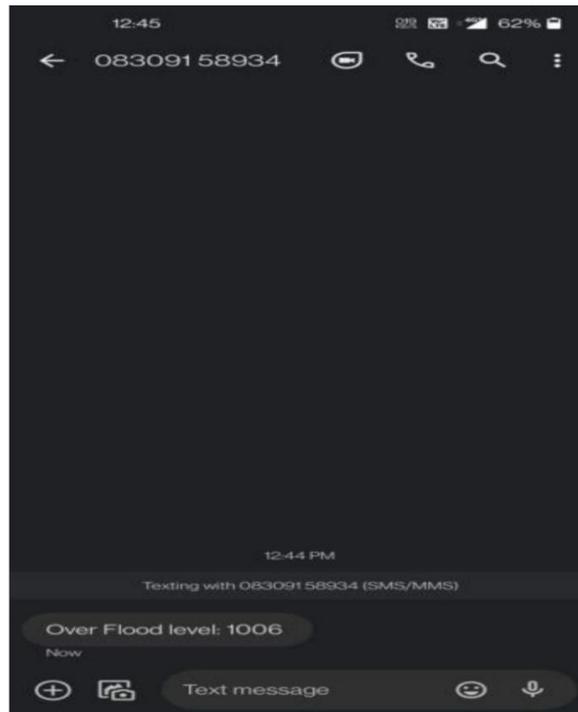
Description: If flood level exceeds threshold
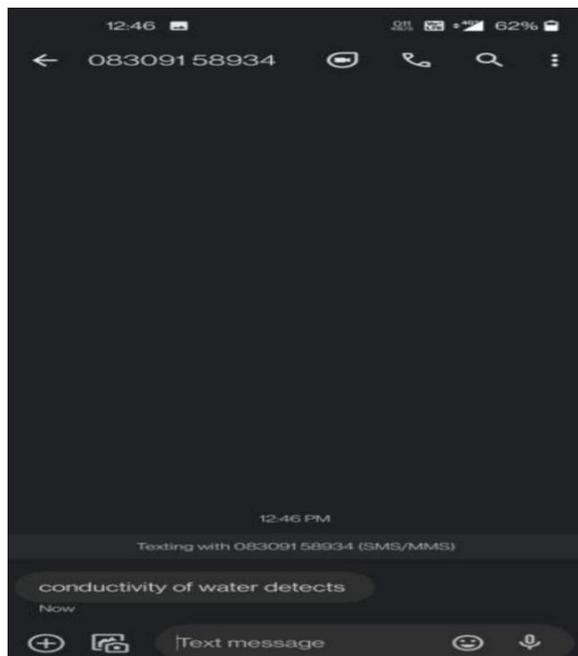
Description: If conductivity exceeds threshold
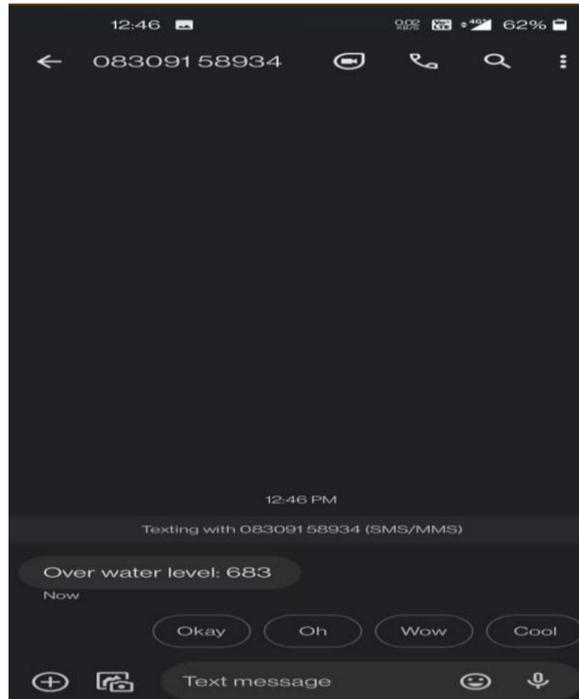
Description: If water level exceeds threshold
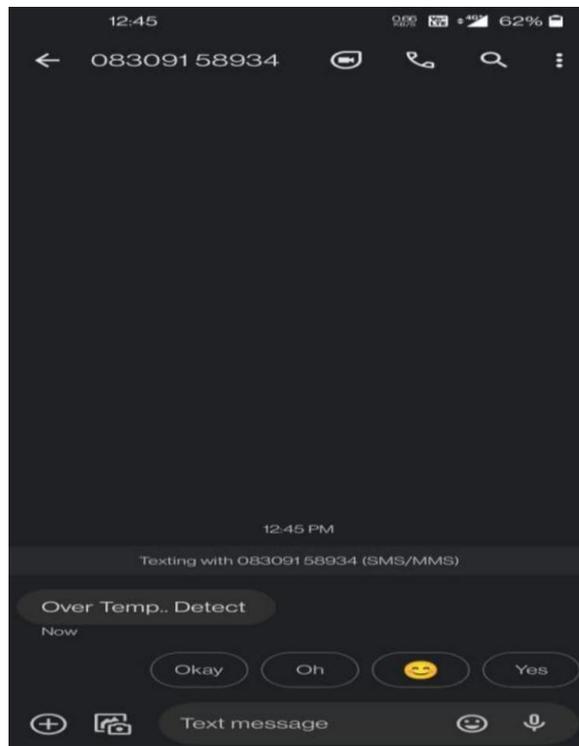
Description: If temperature exceeds threshold

VII.   CONCLUSION

This project ensures the possibility to provide an alert system that will overcome the risk of flood. The project is enabled with IOT technology so that the sensor data can be monitored from anywhere in the world. More sensors can be combined into the system in order to create more accurate and efficient flood detection system. It can also contribute to the government agencies or authority that ultimately helps the society and mankind about the flood like hazardous natural disaster. It will monitor all the aspects which can lead to flood. When the water level rises along with the speed, it will send an alert immediately. It also ensures increased

accessibility in dealing and reverting to this catastrophic incident. In summary, it will help the people in taking quick decisions and planning against this disaster mankind about the flood like natural disaster.

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