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Early Flood Detection and Avoidance Using IoT

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ABSTRACT: Flooding is a natural phenomenon which has attracted global attention as a result of its negative impact on the society. The events of flooding are unlikely to change, however, its impact on our society can be very well reduced. This project focuses on providing early warnings to areas likely to be ravaged by flood events using Wireless Sensor Network (WSN). The system involves the deployment of sensor nodes at specific flood vulnerable locations for real-time flood monitoring and detection. Flood events relating to flash flooding and run-off water or overflow are successfully monitored in real time which saves individuals plenty of time to prepare against predicted flood occurrence, saving them from the aftermath of flood disaster.The system was tested via simulation of different flood scenarios, and the outcome was efficient and accurate.

I. INTRODUCTION

IOT early flood detection and avoidance is an system which is used to detect the occurance of a flood. By measuring various such as humidity, temperature, water flow, level of water in dam etc.The sensors in the module detects these parameters continuously and takes action immediately based on the results. In case the values shoots over the predefined threshold, this module triggers and alert system. The raw data is transferred over the IOT which can be used to fine tune the system and hence increase the accuracy of the module,that are using DHT11 sensor which detects the humidity and temperature, HCSR04 measures object distance using ultra sonic ranging. All these sensors are connected to the MSP430 which does the necessary computation.

II. LITERATURE SURVEY

Amjath Ali J 1, B. Thangalakshmi 2, A. Vincy Beaulah3 1 Lecturer, Wi-fi supporting water level indicates using alarm.

Disaster-LINK is a smart IoT device that acts as an alarm and monitoring system during natural disasters that operates by communicating over internet. It comes with Wi-Fi supportfor internet connectivity and uses an IoT cloud platform which helps to control, monitor and manage the device.

Edward Udo, EtebongIsong

Article Flood monitoring system using the WSN control

Nigeria as a whole and Uyo, a southern province in Nigeria, in particular is facing a serious challenge with an increasing frequency of flood in recent years. It is therefore crucial to utilize the state-of-the-art sensing and communication technologies to monitor and detect flood occurrences the role of the designed Flood Monitoring and Detection System (FMDS) based on WSN.

Syed NazmusSakib; TanjeaAne; NafisaMatin; M. Shamim Kaiser

Neuro-fuzzy based flood monitoring systemThis paper presents a neuro-fuzzy controller-based flood monitoring system using wireless sensor network. The distributed sensor nodes use IEEE 802.15.4 protocol, also called low-rate wireless personal area network, to collect the sensor information such as water level data from the river, rainfall, wind speed and air pressure data from a selected site. In order to validate the proposed flood monitoring system.

ThinagranperumalandMdNasirsuleimanC.Y.LeongIoT Enabled Water MoniteringSystem.IoT based water monitoring system that measure water level in real time. The prototype is based on idea that the level of water can be very important parameterwhen it comes to the flood occurrencesespecially in disaster prone area.

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V Neeraj Kumar, Alka Agrawal, RA Khan Iran.IoT involved in sensing and proposed a new device deployment strategy.IoT involved in sensing and proposed a new device deployment strategy for accurate detection of correct water level in urban flood-like situation. For the device deployment, a cell elimination algorithm has suggested to locate the possible position of the place, where water logging is possible very quickly after a rainfall.

Varsha B Indalkar, Rushikesh P Jadhav, Prajakta J Gaikwad, SheetalSuryawanshi.Bridge Safety and Flood Detection System using IoT.The heavy floods can be so disastrous that the infrastructure is washed away, the people and the animals drown, and the people can be stranded for long periods.

The society and the economy of the country will suffer in many ways after the flood. The loss of the lives, the vegetation, and the infrastructure. In this project real-time safety evaluation of bridges includes the following components: real-time analysis of flood, real-time detection of cracks,real time analysis of Water level,material estimation for bridge size.

III. METHODOLOGY

"IoT Early Flood Detection & Avoidance System" is an intelligent system which keeps close watch over various natural factors to predict a flood, so we can embrace ourselves for caution, to minimise the damage caused by the flood. Natural disasters like a flood can be devastating leading to property damage and loss of lives. To eliminate or lessen the impacts of the flood, the system uses various natural factors to detect flood. The system has a wifi connectivity, thus it's collected data can be accessed from anywhere quite easily using IoT. To detect a flood the system observes various natural factors, which includes humidity, temperature, water level and flow level. To collect data of mentioned natural factors the system consist of different sensors which collects data for individual parameters. For detecting changes in humidity and temperature the system has a DHT11 Digital Temperature Humidity Sensor. It is a advanced sensor module with consists of resistive humidity and temperature detection components.

Proposed System

Floods are natural disasters that cause excessive loss of life and property. A situation of flood arises when the water level across above the needed. This system can help reducing the loss caused by floods by implementing an early flood detection mechanism. The objective of this telemetry-based work is to monitor the flood situation at the earliest, and send a notification in case of danger on the webpage which is controlled by Govt. Authority, so that people can avoid false news. The notification sent can be read globally through IoT. An ultrasonic sensor is connected to the microcontroller that measures the value of water in the dams or rivers and sends that information to the microcontroller. The GPRS sends that notification through the internet on the webpage using IoT network.

Working Principle

To detect a flood the system observes various natural factors, which includes humidity, temperature, water level and flow level. To collect data of mentioned natural factors the system consist of different sensors which collects data for individual parameters. For detecting changes in humidity and temperature the system has a DHT11 Digital Temperature Humidity Sensor.

It is a advanced sensor module with consists of resistive humidity and temperature detection components.The water level is always under observation by a float sensor, which work by opening and closing circuits (dry contacts) as water levels rise and fall. It normally rest in the closed position, meaning the circuit is incomplete and no electricity is passing through the wires yet.

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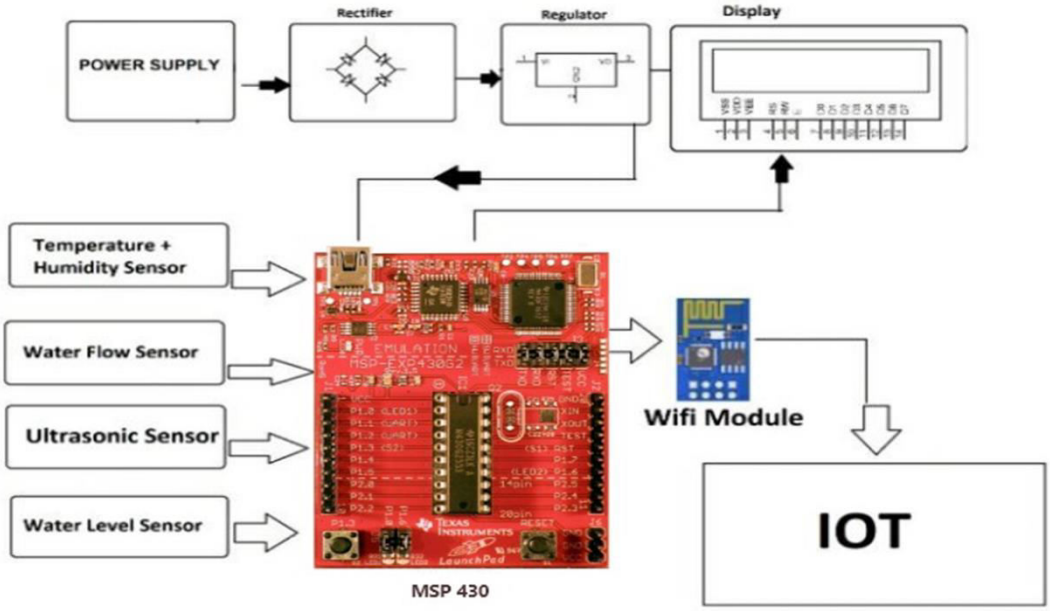
Block Diagram



Future Enhancement

In our project we have developed a module for provide first case prevention in case of flood. This system uses MSP 430 along with couple of other sensors such as DHT11, ESP8266 to achieve the desired output. This module generates an alert signal which is transferred wirelessly to the concerned authorities. The date collected is stored in the database for future reference.

IV. CONCLUSION

The different sensors measure the various environmental and weather-related parameters and monitor them constantly. The data from these sensors is constantly fed to an MSP 430 controller. The MSP 430 program constantly checks for any irregularities in the sensor measurements and estimates the weather conditions based on the sensor data.

A WiFi module is also connected to the MSP 430 controller. The MSP 430 sends the sensor data to the remote IOT platform using the IOT protocols over the WiFi connection. The LCD is used to display the real-time values of all the sensors. If the value of any sensor crosses over a certain threshold value, the buzzer is turned on.A GUI is constructed on the remote server IOT platform in order to display the sensor data in a visual format. Using this project, the flood-related parameters can be monitored from anywhere in the world remotely by using blynk app.

REFERENCES

[1] JagadeeshBabuMallisetty and Chandrasekhar V.Internet of Things BasedReal Time Flood Monitoring and Alert Management system, May 2012.
[2] JaymalaPatil, AnujaKulkarni.Wireless Sensor Network Using Flood Monitoring, IJCSMC, Vol. 2, Issue. 11, November 2013.
[3]Amjath Ali J 1 , B. Thangalakshmi 2 , A. Vincy Beaulah3 1 Lecturer, Department of Electrical and Electronics Engg., Ibra college of Technology, Iot Based Disaster Detection,Early Warning Device, IEEE Explore, 2014.
[4] ThinagaranPerumal, MdNasir Suleiman, C. Y. Leong. IoT Enabled Water Monitoring System IEEE Explore, 2015
[5]S. Poslad, S. E. Middleton, F. Chaves, R. Tao," IoT early warning system for natural environment",May2016
[6] Z. M. Taiband Z. D. Mansor, " Review of flood disaster management in iot September 2017.
[7]O. Necmioglu and U. Bugel, "A semantic IoT early warning system for natural environment crisis management",December 2017

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[8] R. Becker "A future of more extreme floods, brought to you by climate change," May 2017.
[9] SyedNazmus, Sakib M. Shamim, Kaiser. An intelligent Flood Monitoring System for Bangladesh using Wireless Sensor Network, ResearchGate, 2016.
[10] S. Yeon, J. Kang*, I. Lee. A Study on real-time Flood Monitoring System based on Sensors using Flood Damage Insurance Map, The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XLII3/W4, 2018 GeoInformationFor Disaster Management.

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