

Early flood Detection and Avoidance by Iot

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ABSTRACT: For our final project for experimental engineering we will design, calibrate and implement a flood detection machine. We will sample data from four sensors collecting four distinct types of data. The first sensor is ultrasonic sensor which measures the distance to the target by measuring the time between the emission and reception. The temperature sensor LM35 is used to measure the temperature of the environment accurately. LM35 sensor is an integrated circuit in which the voltage output is directly proportional to the temperature Celsius. Water flow sensor is used to provide information of water flow stability. When water flows through the valve it rotates the rotor. By this, the change can be observed in the speed of the motor. Thus, the rate of flow of water can be measured. All the values can be collected and sent to the Arduino to process these values and then shown on the screen with the help of a WiFi module and with the use of IOT gecko.

I. INTRODUCTION

Floods can also occur in rivers when the flow rate exceeds the capacity of the river channel, particularly at bends or meanders in the waterway. While riverine flood damage can be eliminated by moving away from rivers and other bodies of water, people have traditionally lived and worked

by rivers because the land is usually flat and fertile and because rivers provide easy travel and access to commerce and industry. This system is 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 consists of different sensors which collect data for individual parameters. The first sensor is ultrasonic sensor which measures the distance to the target by measuring the time between the emission and reception.

II. LITERATURE SURVEY

Research [1] Wireless sensor networks for flash-flood alerting. Paper presented at the Devices, Circuits and Systems, 2004. Proceedings of the Research [2] has been conducted on Urban flash flood monitoring, mapping and forecasting via a tailored sensor network system.

III. METHODOLOGY

The measurement of rising water level is done to detect the flood. The system uses four sensors to detect Temperature, Humidity, water level and flow level at every stage. Detected sensor values are processed using Arduino and it is transmitted to IOT through Wi-Fi module.

Fig 1: methodology

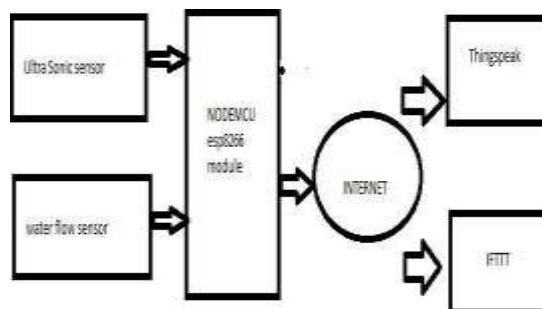


Fig1 show the block diagram of the riverside flood monitoring system. In this project we are using two sensors to find out the two different parameters. One is ultrasonic sensor which is used to find the water level of a river and other is water flow sensor which is used to determine the flow rate of the river.

A. Ultra-Sonic Sensor

The ultra-sonic sensor will give the accurate distance with minimum error possible. It consists of four pins; those are VCC, GND, TRIG, ECHO pins. It requires 5v to operate and its range is up to 5 meters far from the sensor.



Fig2: Ultra-Sonic Sensor

B. Water Flow Sensor

Water flow sensor is used to find the water flow rate and we can find the quantity of water that is flowing

through river. It consists of 3 pins. VCC, GND and Data pin. It requires 5V to operate.

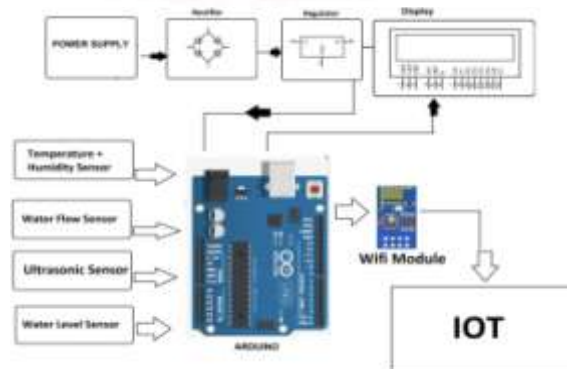


Fig4: block diagram

IV. SYSTEM REQUIREMENT AND ANALYSIS AND SPECIFICATION
HARDWARE ARDUINO UNO

The main hardware tool that we are using is Arduino Uno which is a microcontroller board based on the ATmega328 (as shown in Fig5.1). It has 14 digital input/output pins, 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button.

Temperature sensor: A temperature sensor detects the hotness and the coldness of the environment. The sensing of the temperature can be done with the

directly contact or an indirect contact.

Water level: The water level is always under observation by a float sensor, which works by opening and closing circuits as water levels rise and fall. It normally rests in the closed position, meaning the circuit is incomplete and no electricity is passing through the wires yet.

LCD

LCD stands for liquid crystal display. It is an output device used to display output. They are commonly used in LED TV, smart phone and

instrument panels

ArduinoIDE

It is basically an open source software used to program Arduino microcontroller board. The programming is done in embedded language. The IDE contains serial window and serial monitor to see the Real-time output of the system.

HARDWAREIMPLEMENTATION

To detect a flood the system observes various natural factors, which includes Humidity, temperature, Water level and Flow level. For detecting changes in humidity and temperature the system has a DHT11 Sensor.



Fig2:Hardwareimplementation

SOFTWAREIMPLEMENTATION

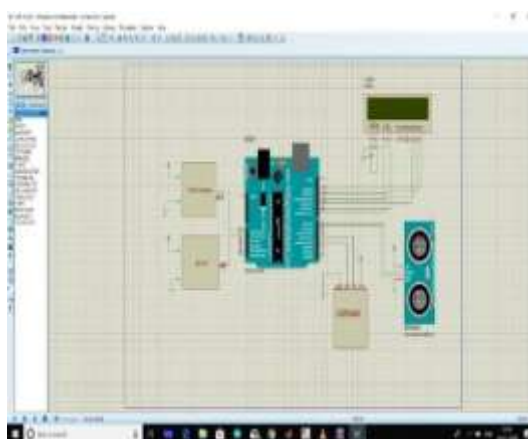


Fig3:Softwareimplementation

CONCLUSION

This work enlightens the possibility to provide an alert system to overcome the flood risk. The proposed prototype system has been tested and it works as proposed. It is able to send an alert message to the user with the time of the water rise also with the speed of the water rises for prediction how quick is the flood is happening.

REFERENCES

[1]. AkarshSinha, M.Pavithra, K.R.Sutharshan, "A rduinobasedpulsewidthmodulated output.

- [2]. CalinCorciova, RaduCiorap, Dan ZahariaandDanielaMatei, 2011. OnUsingImpedance Plethysmography for Estimation of Blood Flow, IEEE.
- [3]. Edward Sazonov, Timothy Haskew, Andrew Price, Bryant Grace and Stephanie Schuckers, 2012.