EARLY FLOOD WARNING SYSTEM AND CROP LOSS PREDICTION

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A B S T R A C T

The main objective of the early flood warning system and crop loss prediction is its detects and avoids flood in a timely manner. Existing system flows the manual process of finding the water level and there is no proper way to check the water-in-flow to dam and this lacks in providing the information about the risk conditions that occurs during mansoon sensors. Agricultural losses strongly depend on the crops affected, which needs to be predicted accurately agricultural products needs security and prediction in initial stages, like protection from attacks of rodents or insects in fields.

1. Introduction

In some part of india, climate changes especially in some regions of Karnataka and kerala etc, heavy rainfalls are common Which causes much material-loss and even its dangerous for lives of people residing around such areas although flood cannot be prevented completely, but the loss can be reduced by notifying or alerting the people early using this system.

Using this IOT Technology, we can make a system which can provide a advance alert of flooding.This system will also help the local government to solve the problems related to loss caused by floods.

Floods cannot be prevented completely but its loss can be reduced to some extent if we get to know about its possibility in early stages.

2.Literature Survey

- Octavian A. postolache, J.M.Dias and P.M.B Silva Giaro in 2009 .
- Elizabeth A.Basha,"model based monitoring for early warninfg flood detection".
- Udo N.E.B.Isong, "flood monitoring and detection system using wireless sensor network".

3.System Specification

3.1 Software Requirements
1 .Windows:7, 8, 10
2. Tools used: Microsoft visuals studio code
3. Programming language: C++

3.2 Hardware Requirements
1. Arduino microcontroller: It is an open-source platform which is used for building electronic projects also it consist of a physical programmable circuit board and piece of IDE that runs on a system. It is used for specified version of C++, making it easier to learn the program.

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2. LCD: A LCD is a liquid crystal display, it is a flat-panel display and that uses the light modulating properties of liquid crystals.they are used to display arbitrary images and fixed images. LCD's can be either on or off ,positive or negative which depends on the polarized arrangement.

3. Water-level sensor: A water-level sensor is a flat switch device used for sensing the level of water within a tank or dam. It may cause a pump ,an indicator ,an alarm, or other device.

4. Buzzer: A buzzer is an audio-signal device which may be mechanical or electro-mechanical. It includes the alarm devices, timers,

5. Ultrasonic sensor :It is an electronic device that measure the distance of target object by emitting the ultra sonic sound waves ,it converts the reflected sound into electrical signal. It sounds can travel faster than speed of audio.

6. Water-flow sensor: Water flow sensor consist of a plastic valve from which water can pass.

7.DHT11 sensor: It is a basic and ultra low cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermistor to measure the surrounding air.

4. System Design

4.1 Proposed System

By using this system we can provide information on current level of water in particular areas. This system is very useful to send the alerts regarding floods to the people so that preventive measures can be taken soon and thereby reduce the loss caused by floods.

4.2 Existing System

The existing system follows the manual process of finding the water-level and there is no proper way to check the water-in-flow to dam and lacks in providing the information about the risk condition that occurs during the monsoon seasons.
In order to detect and avoid floods in timely manner.

5. Advantages

- It saves time.
- Manual operation has been reduced to major extent.
- Less manpower required.
- Easy to use.
- Efficient and reliable.
  Receiving all types of government benefits will be easy.
- Vendor or suppliers materials will be verified in better method.
- Government can easily support for the suffered farmers.

6. Applications

- This can be used in agriculture fields which is very helpful and useful for the farmers.
- Similar methods can be implemented for cold storage departments.
- All APMC yards can be implemented with this method.
- Evidence collection system can be implemented in vehicles to solve insurance claim issue.

7. Methodology

- To sense the raise and dip in temperature .
- Amount of crop loss sensing in a particular area.
- Depth sensing to get the depth and threshold of the river flowing at different points of habitation.
- To check the flow of water at strategic points using flow sensors.
- To verify the amount of movement at high altitude and more rainfall regions using accelometer.
- IOT system which decides the threshold and triggers.

8. Implementation

- In the first phase, we focus on study and understanding the functionality of required components and preparing the prototype model.
- Our model consist of a agricultural land where we fix different sensors types.
- In second phase, we focus on implementing the tank water-level sensor, water-flow sensor ,weather monitoring sensor and buzzer.
- Here the water-level sensors detect the water-level at tank storage at two distinct levels predicting the normal and danger.
- Water-flow sensor detect the water-flow rate.
- Weather monitoring sensor detects the climate and predict rainfall on that region.
- Buzzer are used for alerting the people near by dam area.
- Ultrasonic sensors are placed in agricultural land to predict the crop loss.
- In third phase ,we focus on displaying the sensor data.
- We use LCD display to show the sensor data.

9. Conclusion

The early flood warning system helps to reduce the risk of material loss, damage caused by flood, especially in agricultural sector, crop loss and even lives of people living around the endangered area. This system can be used in areas of flood   prone which sends the notification to the client about the conditions of flood.

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