FLOOD DETECTION USING IOT

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ABSTRACT

Abstract Flood is an unavoidable natural disaster in Maharashtra, India, causing heavy flow of traffic and can also cause severe damage to properties and lives. For this reason, we created a flood detection system to monitor rising water in residential areas. Using ultrasonic sensor we created flood level sensing device which is attached to Node MCU controller to process the sensor's analog signal into a usable digital value of distance. The user can get real-time information on monitoring flooded roads over SMS based service. Flood height is determined by subtracting the sensor's height with respect to the floor minus the sensed distance between the sensor and the flood water. Updates on the height of the water level will be texted to the rescue team (Local Government Unit) and to the residents and can the locals can also view level of the flood in the interface of the system. The level of the flood will be divided into four. The flood sensor and microcontroller will be powered by a solar power for the benefit of continuous operation of water flood height detection and network data transmission. The Arduino Flood Detector System is developed to be one of the fastest method to monitor flood that will help motorists or road user to avoid problem when flood occurred.

Keyword : - , *flood, IOT, Diaster warning.*

1. Introduction

Flood occurs when water overflows from the river, lake or from heavy rainfall and it can happen at any time of the year. Flooding can be very dangerous, when floods happen in an area that people live, the water carries along objects like houses, cars, furniture and even people. It can wipe away property, trees and many more heavy items. For years, flooded roads have been a problem in Metro Manila. It causes heavy flow of traffic. Both motorists and computers are getting stuck in a flooded areas and getting lost in finding possible routes just to go to their destinations. When traffic happened people's money, time and effort are wasted. Through the local government unit flood control has been extending their efforts to inform the commuters regarding the situation in flooded areas during rainy season, still the dissemination of information to the locals are not enough. For this reason, the "Arduino Flood Detector System" is been develop, to help the road user to avoid this problem happened. It was invented based on problem faced by motorists and commuters when flood occurred. This will avoid the traffic jam because the users have a time to find a possible routes before they are going to be stuck at the flood area. The system will function when the admin activate the system and when water along the road detected by distance over ultrasonic sensor. When the flood occur, the ultrasonic sensor will sent signal to the microprocessor circuit and the sense water level will be display in the user interface and it will automatically send a Short Message Service (SMS) to those recognized residents and it will continue update until the water level detected returns to normal. The process repeats as the water level continuous to rise. The idea of an SMS based warning system was proposed because mobile phones

1.1 Objective of project

This flood alert system is basically useful to get idea about flood in forecast to do the sensing of the incoming water level for detection of flood is done by implementing sensors. In this way water level will be sensed by the sensor and concerned messages will be given to the controller then it will take the further action on that command.

1.2 Scope of project

The given product is develop using sensor network.

The main purpose of application is to know nearest flood situation on a simple android app.

2. Existing System

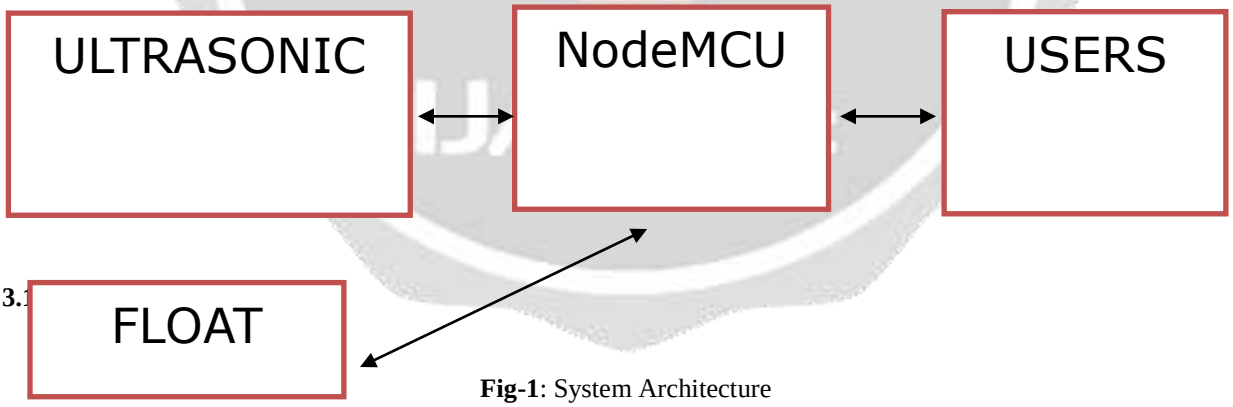
Disaster flood alert system using GSM and ultrasonic frequency sensors is one of the important technology which is useful to make the people alert from disaster flood, in this project ultrasonic transducers are used to find out the water level of the flood . And then information given to the controller and GSM, this system continuously send the messages towards control room about the level of the flood when water level will change.

2.1 Proposed System

The existing system in terms of efficiency, a test was conducted by recording the time delay of the detection of the water level to be transmitted updated in the website .Through this system, the information could be available to anyone who could access the internet once the website will be given a domain and can be broadcasted live in the internet. Aside from the people near the river who would be alarmed once the water level will be of critical level, those who are away will also be informed of the current situation. With that, necessary preparations and safety measures can be done. It could be a help to prevent or lessen the damages that flood may bring. The flood warning system should be carried a step further in notifying the public. Since social networking is at the moment one of the popular medium of communication, sending an alert through it would hence reach a larger audience. A prototype of the proposed system is discussed in this paper and the result of the testing phase is also elaborated. The architecture of the system can be expanded further to a fully functioning system in alerting the public of an impending disaster caused by flood.

3. System Architecture

In the design phase the architecture is establish. This phase starts with the requirement document delivered by requirement phase and maps the requirements into architecture. The architecture dense thee components, their interfaces and behaviors. The deliverable design document is the architecture. The design document describes a plan to implement the requirements.



3.1

Fig-1: System Architecture

Things (IOT) In fact, it offers a complex scenario for the variety and number of sensors involved, their location and relative communication problems. The type of sensors involved in the process and the corresponding type of installation depend on the kind of collected data and on their geo-localization(i.e., urban areas, where powering and communications are relatively simple, or in remote and diffcult to access mountainous or country locations). The kind of data collected ranges from rain monitoring to river gauging with several parameters to be monitored and compared. In the case of rivers, the problem depends on their size and dimension and geography of the region where they flow, if they are small creeks or wide rivers, if they flow in a steep or at area, in open air or are channeled

underground, etc. From this point of view, we already activated different collaborations and denitions of common goals with public administrations involved in the management of the experimental areas. To this aim, we designed a general hardware and software IOT infrastructure and architecture applicable to the environmental problem mentioned above, but extensible to the more general problem of monitoring the environment in densely inhabited areas. Our research will be an element of great importance to train specific risk management and to deliver elements of innovation and encouragement for the denition of land management strategies both on the local and regional scale. Moreover, this research will help to provide knowledge and tools for effective decision making and public engagement. In particular, we detail the sensor classes (their design for the new ones), their communication mechanisms and associated software services as components of a general IOT infrastructure. The aim is to monitor either rainfalls, river discharge and their temporal correlation in order to obtain early alarming information. In our IoT approach, all collected data will be continuously transmitted, through the Internet communication infrastructure, to software components designed to compute the streamow and to quantify the spatial distribution of flood risk for each controlled watershed. The computed risks, together with data coming from other sources (barometric and river discharge sensors, cameras operators of public organizations, emergency agencies, private citizens), will be examined by a diagnostic decision system implementing a risk-alert scheduling strategy, able to dignose the health state of the controlled environment and to dene specialized alarm levels for each potentially interested area. Finally, the computed risks will be used for specializing alerting messages, to be sent to all citizens (ubiquity) present in each selected area only (alerting locality).

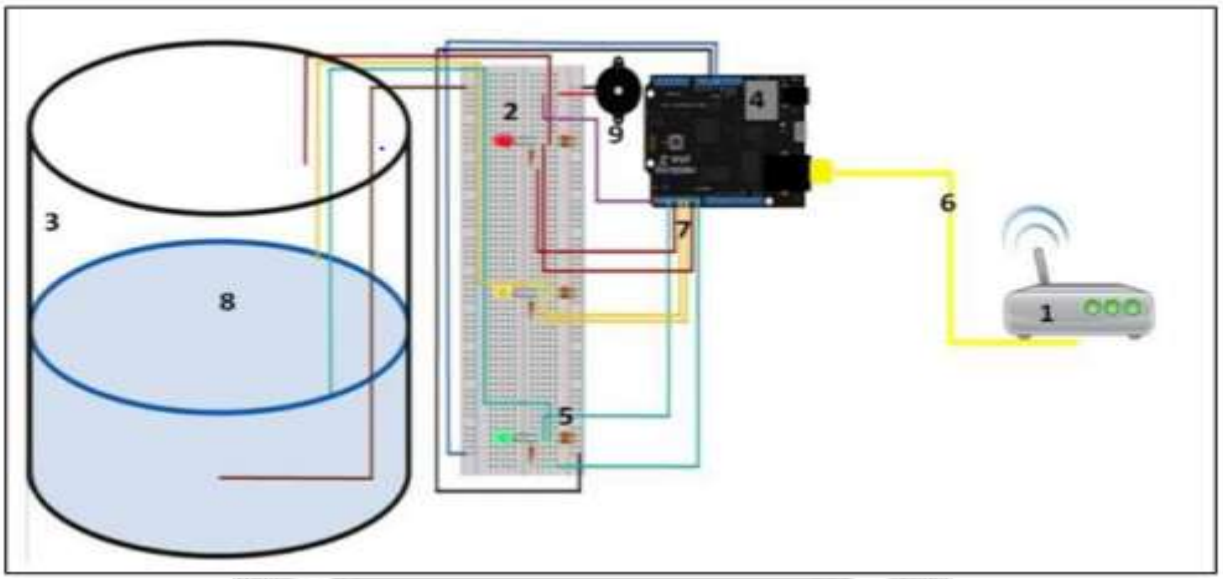


Fig -2: Prototype Model (paste here prototype model Diagram & erase this)

4. CONCLUSIONS

According to definitions of IOT, if we consider a sensor as an element of IOT which enables to communicate its current status and be published on Internet, then our proposal is very close to what we are intending to achieve within the concept of Internet of things. Nevertheless, the real intent of the proposal is to achieve a flood early warning system. So far, we have only built a micro-model through a prototype, that sends an audible signal and graphical messages towards smart-phones about the water level into a container.

5. REFERENCES

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