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IoT Based Water Level Meter for Alerting Population about Floods

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ABSTRACT

The most important thing before, during and after a disaster is the dissemination of information, the deployment of IoT-enabled devices (Internet of Things) which can bring benefits in terms of providing people with the right decision-making information in the face of this disaster. In this paper, we introduce a sensor for measuring water quality in rivers, lakes, ponds and streams. To prove our idea, we've developed a pilot project using a small-scale model used for water-based sensors based on an open circuit that meets water and is tested horizontally in a water container under a controlled environment.

KEYWORDS: *Power Supply, Water Level Weter.LED, PHmeter.Local Siren System*

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I. INTRODUCTION

A water level controlling mechanism is developed which senses the water level in the tank without any contact with the tank and accordingly controls the pump to fill water into the tank. Here ultrasonic sensors are used to sense the water level in the tank. The ultrasonic sensor senses the liquid level in the water tank and feeds this information to the microcontroller. Based on the input from the sensor, the microcontroller accordingly controls the switching of the relay switch, which is a combination of a transistor and a MOSFET in this case. The relay is accordingly controlled to switch on the load in case the water level is less or switch off the load incase the water level is more. Here a device is developed which produces IR rays which can block the rays from the TV remote. The frequency of the IR light is same as the frequency of IR light by the TV remote. This can be placed at the TV receiver such that the rays received by the remote are superimposed by the IR rays emitted by this device. Here a timer powered by a battery is used to produce pulses at frequency equal to the remote output signal frequency and at more than 50% duty cycle, to drive the transistor, which is turn provides power to the IR diode and accordingly the IR diode emits IR rays at that frequency.

II. EXISTING SYSTEM

A sensor is able to convert physical or chemical readings gathered from the environment into signals that can be calculated by a system. A multi sensor node is able to sense several magnitudes in the same device. In a multi sensor, the input variables might be temperature (it is also able to capture nippy changes of temperature), fire, infrared radiation, humidity, smoke and CO2. A wireless sensor network could be an useful architecture for the deployment of the sensors used for fire detection and verification. The most vital factors for the quality and productivity of plant growth are temperature, humidity, light and the level of the carbon dioxide. Constant monitoring of these environmental variables gives information to the farmer to better understand, how each factor affects growth and how to manage maximal crop productiveness. The optimal greenhouse climate adjustment can facilitate us to advance productivity and to achieve remarkable energy saving, particularly during the winter in northern countries.

In the past generation greenhouses it was enough to have one cabled measurement point in the middle to offer the information to the greenhouse automation system. The system itself was typically simple without opportunities to manage locally heating, lights, ventilation or some other activity, which was affecting the greenhouse interior climate. The typical size of the greenhouse itself is much larger than it was before, and the greenhouse facilities provide several options to make local adjustments to the light, ventilation

and other greenhouse support systems. However, additional measurement data is also needed to construct this kind of automation system to work properly. Increased number of measurement points must not dramatically augment the automation system cost. It should also be possible to easily alter the location of the measurement points according to the particular needs, which depend on the specific plant, on the possible changes in the external weather or greenhouse structure and on the plant placement in the greenhouse. Wireless sensor network can form a useful part of the automation system architecture in modern greenhouses constructively.

Wireless communication can be used to collect the measurements and to communicate between the centralized control and the actuators located to the different parts of the greenhouse. In advanced WSN solutions, some parts of the control system itself can also be implemented in a distributed manner to the network such that local control loops can be formed. Compared to the cabled systems, the installation of WSN is fast, cheap and easy. Moreover, it is easy to relocate the measurement points when needed by just moving sensor nodes from one location to another within a communication range of the coordinator device.

III. PROPOSED SYSTEM

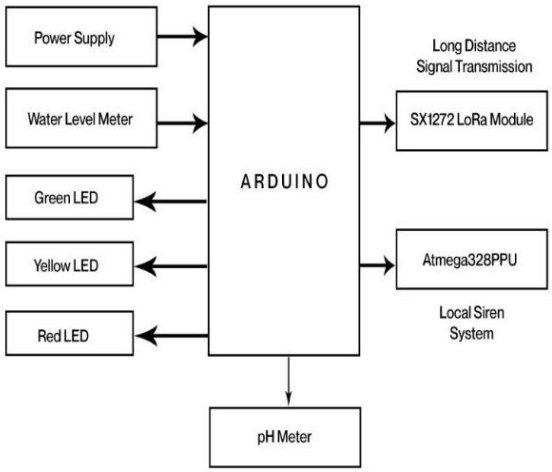

Fig 1.Block Diagram

IV. METHADOLOGY

This project uses sensors such as Humidity, Smoke Sensor, Temperature sensor (LM35).Whenever hazardous gas is detected then buzzer alert is given. The temperature sensor LM35 senses the temperature and converts it into an electrical (analog) signal. The analog signal is converted into digital format by the analog-to-digital converter (ADC). Then the fan will be ON. The status of every sensor will give updates through the IOT. Light gets on whenever LDR senses night mode. Motor will be on in case of dry condition detected by moisture sensor.

V. APPLICATION

- Reliability
- Ease of Operation
- Useful to detect harmful gases

VI. ADVANTAGES

- Can be used in Mines to detect presence of dreadful gases.
- In public places like shopping malls, etc, this project can be applied where public safety is a major task.
- In Marine Applications

VII. HARDWARE SPECIFICATION

- Water Level Indicator
- ESP8266
- LED
- Power Supply
- Aurdino

VIII. SOFTWARE SPECIFICATION

- Arduino IDE

IX. INTRODUCTION TO AURDINO IDE SYSTEM

- Arduino IDE is an open source software that is mainly used for writing and compiling the code into the Arduino Module.
- It is an official Arduino software, making code compilation too easy that even a common person with no prior technical knowledge can get their feet wet with the learning process.
- It is easily available for operating systems like MAC, Windows, Linux and runs on the Java Platform that comes with inbuilt functions and commands that play a vital role for debugging, editing and compiling the code in the environment.
- A range of Arduino modules available including Arduino Uno, Arduino Mega, Arduino Leonardo, Arduino Micro and many more.
- Each of them contains a microcontroller on the board that is actually programmed and accepts the information in the form of code.
- The main code, also known as a sketch, created on the IDE platform will ultimately generate a Hex File which is then transferred and uploaded in the controller on the board.

X. THE AURDINO IDE SYSTEM

The IDE environment is mainly distributed into three sections

- Menu Bar
- Text Editor
- Output Pane

XI. RESULT AND CONCLUSION

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. 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 smartphones about the water level into a container.

This micro-model was developed based on a programmable electronic board (Netduino Plus 2), where some electrical resistors were connected to three heights into a water container, the rising water levels covering the resistance so that cause variation in the impedance, this fact indicates what is the water level, and so on for the three different heights. This information was transmitted to a web server via WiFi. After, this information can be accessed by mobile devices, users can graphically see the data, these data show the values of water levels.

Subsequently, the prototype tests were conducted into a controlled environment, these tests consisted in measuring the water level in a container with water, different filling levels were tested, such testing showed the expected results. Given these facts, if it is known the time when rising the water level up to the threshold while the water level passes each level mark, it is possible to know exactly these calculations in a real scenario like a river. Hence, people can be opportunely informed when rising river levels, so inhabitants can make a decision and start preparing to evacuate their homes if necessary. So now we can consider a really warning system to alert residents of low-lying areas about changes in rivers.

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