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Hi-Tech Farm Pond Monitoring and Management System: A Review Paper

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Abstract: ***The project one step take towards the Village Empowerment. The system can help to automate the farm Pond activities which will increase the income of farmer and one of the most important purpose of project is that to save the life of living that fall in farm pond like Human, animals, birds. The system can also help to regulates quality of pond water, which is necessary for farm activities to increase the crop production. The last module is that system can helps to provide water to crops as per the requirements.***
Keyword: Software Prototyping, Microcontroller, Rain Drop Sensor, Moisture Sensor, Water Quality Moitoring GSM module, Automatic Motor ON/OFF.

I. INTRODUCTION

This project is one-step taken towards village empowerment. The system can helps to automate the farm pond activities, which will increase the farmer income and also serve the purpose to save the life (human, animals, garbage, etc.) fall in the farm pond. The system can also help to regulate the quality of pond water, which is necessary for farming activities to increase crop production.

A. There Are Three Modules In Our System

1) Security for Farm Pond
2) Management for crop production
3) Monitoring for water qualityThis is fully automated system. It reduces manual work of farmers and helps to increase there crop production and income rate. Now a days farmers are operating farm pond manually which causing many man made mistakes, the water quality of farm pond is also not maintained due to some avoidable circumstances.

B. Some Applications Of System Are Given Below

1) To increase the income of farmer income as per the crop Production.
2) It Regulates the quality of water for the crop Production.
3) It saves the life of living things like Human, Animals.

II. LITERATURE SURVEY

Author Peng Jiang et al. has proposed ”Design of a Water Environment Monitoring System Based on Wireless Sensor Networks” [1].

A water environmental monitoring system based on a wireless sensor network is proposed. It consists of three parts: data monitoring nodes, data base station and remote monitoring center. This system is suitable for the complex and large-scale water environment monitoring, such as for reservoirs, lakes, rivers, swamps, and shallow or deep groundwaters. This paper is devoted to the explanation and illustration for our new water environment monitoring system design. The system had successfully accomplished the online auto-monitoring of the water temperature and pH value environment of an artificial lake. The system’s measurement capacity ranges from 0 to 80 C for water temperature, with an accuracy of 0.5 C; from 0 to 14 on pH value, with an accuracy of 0.05 pH units. Sensors applicable to different water quality scenarios should be installed at the nodes to meet the monitoring demands for a variety of water environments and to obtain different parameters. The monitoring system thus promises broad applicability prospects.

Author Siti Asmah Daud et al. has proposed ”Infrared Sensor Rig in Detecting Various Object Shapes” [2].

This paper describes the application of infrared sensor installed in a sensor rigto measure the distance of the object located at the centre of the plate. Data received by the sensor rig that is fully controlled by Arduino as a microcontroller, is then saved in a text file using CoolTerm terminal application. Post processing of the data is fully run using the Matlab software to reconstruct the image

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from the data obtained by infrared sensor. Most of the objects used throughout this research are polygon shapes such as cylinder, rectangle, hemisphere, oval, trefoil, and curvilinear. The sensitivity of the infrared sensor used during the experiment should be considered in order to obtain accurate result and reduce the noise during the data captured process. The closest distance of infrared sensor from the measured object is set into 5 cm. Results show that this sensor is capable to detect any changes in distance measurement and image from the object can be reconstructed.

Author Amita Kapoor et al. has proposed ”Low Cost Soil Moisture Sensors and their Application in Automatic Irrigation System” [3].

This paper presents the design of low cost soil moisture sensor and its application in automatic irrigation system. We develop self-made capacitive sensors using resources available at home. The sensors are then interfaced with microcontroller. An algorithm is developed to detect the threshold moisture levels, and control the water inflow for efficient use of water. Thus, this system can replace human labor, save the water and at same time ensures that plants gets optimum level of water, hence increasing productivity of crop Low Cost Soil Moisture Sensors and their Application in Automatic Irrigation System.

Author Shruti Sridharan et al. has proposed ”Water Quality Monitoring System Using Wireless Sensor Network” [4]. The parameters involved in the water quality monitoring such as the pH level, turbidity and temperature is measured in real time by the sensors that send the data to the base station or control/monitoring room. As the monitoring is intended to be carried out in a remote area with limited access, signal or data from the sensor unit will then be transmitted wirelessly to the base monitoring station. The application of wireless sensor network (WSN) for a water quality monitoring is composed of a number of sensor nodes with networking capability. Such monitoring system can be setup emphasizing on the aspects of low cost, easy ad hoc installation, easy handling and maintenance. The use of wireless system for monitoring purpose will not only reduce the overall monitoring system cost in terms of facilities setup and labor cost, but will also provide flexibility in terms of distance or location. In this paper, the fundamental design and implementation of WSN featuring a high power transmission Zigbee based technology together with the IEEE 802.15.4 compatible transceiver is proposed. It is chosen due to its features that fulfill the requirement for a low cost, easy to use, minimal power consumption and reliable data communication between sensor nodes. The development of graphical user interface (GUI) for the monitoring purposes at the base monitoring station is another main component discussed in this paper. The GUI should be able to display the parameters being monitored continuously in real time. The developed GUI platform using MATLAB is cost- effective and allows easy customization.

Author Vandana Pandya et al. has proposed ”GSM Modem Based Data Acquisition System” [5].

This system uses AVR microcontroller ATmega 644P. the inbuilt ADC receives analog data from sensors and converts it to digital data and passes it to the microcontroller . the sensors continuously sends data from the distant site. This system is interfaced with a GSM modem. this system senses the conditions continuously and a message is sent to a mobile no. using SMS on LCD every 10 minutes. Using this system, the operator can monitor the signals from any where. The GSM modem is connected to microcontroller using RS232 interface. Whenever an SMS is sent to the GSM modem, the GSM modem receives the data and sends to microcontroller. After receiving the signal from the microcontroller it processes the data and sends the read data to mobile number through GSM modem. The collected data is formed a database and stored in a pc. The received data is displayed on the LCD. 16X 2 LCD is provided for user interface.

Author Alessio Carullo et al. has proposed ”An ultrasonic sensor for distance measurement in automotive applica-tions” [6].

This paper describes an ultrasonic sensor that is able to measure the distance from the ground of selected points of a motor vehicle. The sensor is based on the measurement of the time of flight of an ultrasonic pulse, which is reflected by the ground. A constrained optimization technique is employed to obtain reflected pulses that are easily detectable by means of a threshold comparator. Such a technique, which takes the frequency response of the ultrasonic transducers into account, allows a sub-wavelength detection to be obtained. Experimental tests, performed with a 40 kHz piezoelectric-transducer based sensor, showed a standard uncertainty of 1 mm at rest or at low speeds; the sensor still works at speeds of up to 30 m/s, although at higher uncertainty. The sensor is composed of only low cost components, thus being apt for first car equipment in many cases, and is able to selfadapt to different conditions in order to give the best results.

Author Arjun K et al. has proposed ”Detection of Water Level, Quality and Leakage using Raspberry Pi with Internet of Things” [7]. - Water is an essential resource. Quality of water is more important, it has to find whether the water is contaminated or pure. Pipe burst overflow of water from tank and a water leakage is another major reason for wastage of water. To monitor the quality of water with the help of information sensed by the sensors immersed in water, here pH sensor and Turbidity sensors are used to measure the quality of water, so as to keep the water resource within a standard described for domestic usage and to be able to take

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necessary actions to restore the health of the degraded water body. Pressure of water is detected by using Force Sensitive Resister (FSR) for water leakage. The technique of tank water level sensing system monitoring concentrated with some basic parts which are softly aggregated together in our proposed method. The ultrasonic sensor is a reliable circuit. It takes over the task of indicating the water level in the overhead water tanks. It is being used to detect liquid level, as the liquid to be measured either can be inside a water tank. LED sensors are used to indicate the water level. Relay is used for automatic switching of motor on or off. The system relies on raspberry pi and sensors.

III. CONCLUSION

The propose IoT based system can be useful for farm pond monitoring, save the human and animal life.here also solve the problem of water quality and water managemnet.So increases the crop production and hence the one forwards step towards village empowerment.

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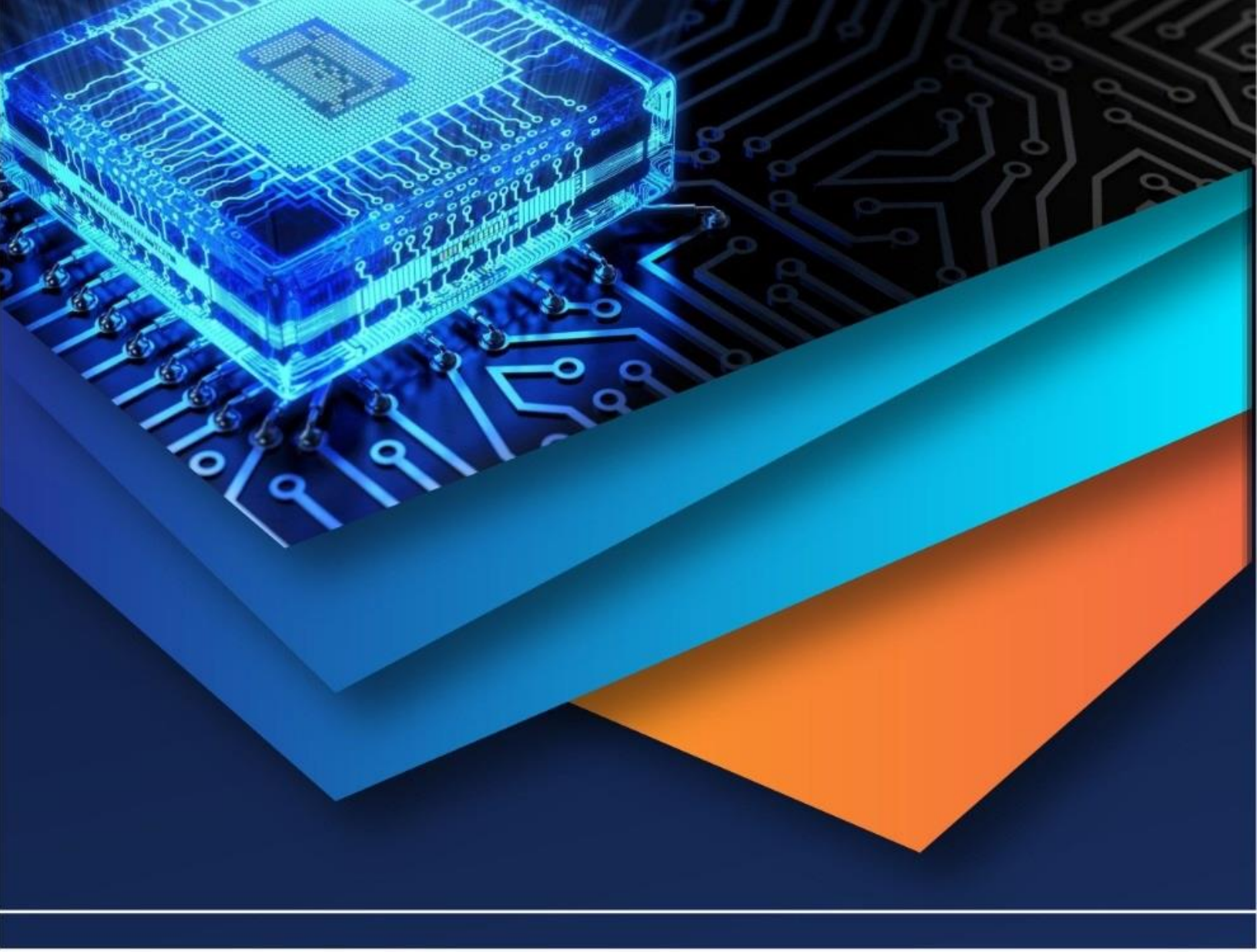

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