Retraction

Retraction: IoT Based Smart Fertilizer Management System
(J. Phys.: Conf. Ser. 1916 012198)

Published 23 February 2022

This article (and all articles in the proceedings volume relating to the same conference) has been retracted by IOP Publishing following an extensive investigation in line with the COPE guidelines. This investigation has uncovered evidence of systematic manipulation of the publication process and considerable citation manipulation.

IOP Publishing respectfully requests that readers consider all work within this volume potentially unreliable, as the volume has not been through a credible peer review process.

IOP Publishing regrets that our usual quality checks did not identify these issues before publication, and have since put additional measures in place to try to prevent these issues from reoccurring. IOP Publishing wishes to credit anonymous whistleblowers and the Problematic Paper Screener [1] for bringing some of the above issues to our attention, prompting us to investigate further.

[1] Cabanac G, Labbé C and Magazinov A 2021 arXiv:2107.06751v1

Retraction published: 23 February 2022
IoT Based Smart Fertilizer Management System

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Abstract. Agriculture is the backbone of the India and villages are the life lines for the growth of India. In our country, over 72% of individuals rely on cultivating which is 33% of the populace puts resources into cultivating. In this manner, the difficulties and issues concerning horticulture should be engaged to frustrate the nation development. The only one solution recommended to this issue is modernizing agriculture using smart technologies. In agriculture, irrigation and fertilizer supply are the two important processes which support crop production. The Conventional water system techniques include a ton of time and exertion in cultivating. A Sensor-based computerized water system framework with manure tank gives a promising answer for oversee rural action. This exploration article gives an immense report on the water system framework and in savvy horticulture.

1. Introduction

In India, horticulture assumes a significant part for improvement in food creation. There is an extraordinary need to robotizing the customary farming practices for the great profitability. Because of spontaneous utilization of water asset the ground water level is diminishing definitely, absence of downpours and shortage of land water additionally brings about decrement in volume of water on earth. We need water in every single field. In our day by day life water assumes a significant part. Horticulture is one of fields where water is needed in enormous amount. Wastage of water is the serious issue in agribusiness. There are numerous strategies to save or to control wastage of water in farming. As like water management, fertilizer management also plays an important role crop production. In this proposed system we will store required fertilizers and different varieties of fertilizers in the individual tanks, below this a huge water tank will be fixed connecting to the drip irrigation pipes fixed in the field through electric valve. Soil moisture sensor fixed in the field will send SMS notification to the farmers mobile via GSM module. Farmers will give some alpha numerical values as the input and it will be sent to the controller through GSM module, then the controller sends the signal to the electrical valves that the duration to open the valve. Thus the fertilizers will directly fall into the water tank and get mixed up with water and then it will be dripped in the fields by drip irrigation method.

2. Existing Method

[1] In Sensor based Mechanized Water system Framework with IOT referenced about utilizing sensor based water system in which the water system will occur at whatever point there is an adjustment in temperature and mugginess of the environmental factors. The water stream is constrained by the electrical worth. The opening and the end of the worth is based the sign got through the microcontroller. Watering
the plant is done drop by drop utilizing precipitation weapon when the dampness level becomes ordinary the sensor sense it and impart a sign to microcontroller and the worth is shift. Two portable are associated utilizing GSM, GSM and Microcontroller are associated utilizing MAX232. To the microcontroller, at that point it gives the sign to the versatile and it enacts the ringer. The ringer demonstrate that the worth ought to be open and when it gets request it impart the sign to microcontroller, at that point microcontroller impart the sign to esteem. The utilization of microcontroller will diminish the force utilization and increment the existence of the framework. This structure is essentially confined to the motorization of water framework system and necessities extra ordinary features.

[2] In Remote sensor Organization Based Robotized Water system and Harvest Field Observing Framework specifies about the remote sensor network based mechanized water system framework for streamlining the utilization of water in farming field. It comprises of conveyed remote sensor organization of soil dampness and temperature sensor put in the agribusiness field. For taking care of the estimations of sensor Zig honey bee convention is utilized. This framework persistently shows the strange state of the land. Utilizing a GSM modem with GPRS office highlight gives the data to the ranchers and interface with PIC 18F77 A microcontroller. The water system framework has both programmed and manual mode. It expands the harvest creation and yield quality. Due the use of PIC microcontroller the length of the program will be large [3].

3. Proposed System

India’s population is 1.38 billion in 2021 and it will keep on increasing day by day, if it keeps on increasing like this after 25 years there will be big scarcity for food products. It will be very difficult to handle that situation with traditional agricultural practices. So it is necessary to simplify the works involved in agriculture [4]. That’s why we have been motivated to complete this task as a project. The major moto of our project is to provide an atomized smart fertilizer management system to the farming to save farmer’s valuable time, money and energy and to prevent the wastage of resources.

The water moisturizer sensor sends the SMS notification to the farmer’s mobile using controller via GSM module [5]. Then farmer will give the input commands to the controller through GSM module in the form of alpha numerical values. These values will be considered as the duration of the valves to be opened. The alphabetic letter mentioned decides the different fertilizer valve that to be opened when the command is given. After this values being entered, the fertilizer drops into the water tank and get dissolved with the water in the tank. Then controller sends the signal to another valve in the field which is connected to the drip irrigation pipes. Thus the dissolved water in the tank will be irrigated automatically by using this drip irrigation pipes. Thus it prevents the wastage of fertilizers and water resource in farming. Figure 1 shows the Block diagram

![Block diagram](image1.png)

**Figure 1.** Block diagram

4. Hardware Components
1) Arduino Microcontroller:
Arduino is an open-source contraptions stage subject to easy-to-use hardware and programming [6][7]. Arduino sheets can examine inputs – light on a sensor, a finger on a catch – and change it into a yield – starting a motor, turning on a Drove. A microcontroller is a little PC on a singular consolidated circuit. In present day phrasing, it is a system on a chip. It contains at any rate one PC processors nearby memory and programmable information/yield peripherals. Microcontrollers are anticipated inserted application. There are utilized in this manner controlled things and gadgets, for example, motor control structures, implantable clinical gadgets, controllers, office machines and other installed systems [6]. Figure 2 shows the Arduino Microcontroller

![Figure 2. Arduino Microcontroller](image1)

2) Soil Moisture Sensor:
Soil dampness sensors measure the volumetric water content in soil. Since the direct gravimetric estimation of free soil dampness requires eliminating, drying and weighing of an example, soil dampness sensors measure the volumetric water content in a roundabout way by utilizing some other property of the dirt, like electrical opposition, dielectric consistent, or communication with neutrons, as an intermediary for the dampness content. This sensor has two tests through which current passes in soil, by then read the obstruction of soil for investigating dampness level. We comprehend that water make the earth more skewed to electric conductivity coming about less impediment in soil where on other hand dry soil has poor electrical conductivity in this manner more opposition in soil. Figure 3 shows the Soil Moisture Sensor

![Figure 3. Soil Moisture Sensor](image2)

3) GSM Module:
GSM module is given by sim uses the compact expert community and send message to the specific experts as indicated by adjusted. It works at either the 900 MHz or 1800 MHz recurrence band. We give supply 12v DC. It is utilized to send message to the trash stop if the Trash bin surpasses the set edge level. With the help of GSM module interfaced, we can send short texts to the junk van driver. Figure 4 shows the GSM module

![Figure 4. GSM Module](image3)
4) Relay Module:
A transfer is essentially a switch which is worked by an electromagnet. The electromagnet requires a little voltage to get actuated which we will give from the Arduino and whenever it is initiated. It will pull the contact to make the high voltage circuit. Figure 5 shows the Relay module.

5. Result and Discussion
The framework furnishes us with the perusing of dampness level of the dirt. This information is utilized to monitor field and to keep a beware of the appropriate working of the framework. Keen compost the executive’s framework is fundamentally intended for presentation of IoT innovation in the water system area. This framework will decrease the work pressing factor of ranchers and save their significant time and can yield more harvests. Figure 6 shows the Nutrition Table. Figure 7 shows the Output.

| Crops      | Banana | Turmeric     | Rice          | Sugarcane          |
|------------|--------|--------------|---------------|--------------------|
| Primary Nutrients | Nitrogen(N) | PNK iron(ii)sulphate | Nitrogen Phosphorus Potassium Zinc Sulphate | Nitrogen Phosphorus Potassium Ferrous sulphate |
| Primary Nutrients | Phosphorus(P) | Zinc sulphate  | Potassium Zinc Sulphate  | Phosphorus Potassium |
| Secondary Nutrients | Calcium Magnesium Sulpur | Ferrous sulphate Urea | Calcium Magnesium | Manganese sulphate Zinc sulphate |

Figure 6. Nutrition Table
6. Conclusion
The IoT based Water system framework with Manure the board framework was discovered to be savvy for improving the compost and water assets for crop creation. This proposed method can be used to On/Off the fertilizer tank and drip irrigation system remotely depending on soil moisture levels. This framework decreases the water and compost utilization to a bigger degree. The force utilization and the upkeep have been diminished without question. The yield efficiency increments and the wastage of assets are decreased without question.

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