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# Automatic Irrigation System Using Wireless Sensor Network

Purushottam Rath[1], Pradeep Kumar Mishra[2]
[1, 2]*Department of Computer Science and Engineering, greater Noida*

***Abstract:*** ***The wireless device network consists of a variety of sensors, computers, and wireless communications. These inventions can be used for controlling the crop parameters within the field. WSN is used as part of agriculture for a variety of reasons such as providing high interpretation, increasing crop production, low energy consumption and widely distributed information. good water management plays an important role in agriculture. Lack of water resources and high number of water pumps relieve management in a very important way. Today, the automatic irrigation system (AIS) is being used to improve the use of agricultural water resources to increase productivity. This irrigation system framework allows for development in a variety of waterless areas. In this way, an effective emergence and irrigation system offers the best advantage in rock bottom water.***

***Keywords: WSN, AIS, WSU, WIU, PA.***

## I. INTRODUCTION

### *A. Wireless Sensor Network*

WSN consists of various independent devices such as a sensor node, a communication device, power supply and processors [1]. Sensory notes use in the area of interest and sensor data. Sensor nodes send data to the base channel through various means of communication such as direct or indirect. The Wireless Sensors Network offers features such as error tolerance, low cost, high hearing ability [2]. The sensory network provides more development than traditional sensors such as random transmission of nodes in the field [3].

### *B. Agriculture*

In an agricultural country like India [4] most people rely entirely on agriculture [5]. Apart from agriculture, they have no other source of income for them. Irrigation becomes a very important part of agriculture [6, 7] because high crop production depends on irrigation. Agriculture uses 85% clean water [8] for irrigation [9]. Many areas are most affected by excessive or low irrigation water during irrigation and unconditional rainfall [10]. Highly irrigated areas suffer by the vegetal productivity. The traditional field irrigation system is generally managed and requires a lot of manpower and tangible resources and is opposed to the development of long-term agricultural production and sustainable use of water resources [11]. The farmers will be able to do the farming with the help of the technologies. [13, 14]. Farmers does not basically tell exactly how to irrigate the garden. By making a few measurements in his mind, the farmer irrigates the field. Apart from the efficient use of water that brings to the field another area of the field is completely irrigated and another area of the field is not affected. In line with this, the farmer faces one problem while irrigation is electricity [14], because they wet the land by using electrical energy that is available nowadays [13]. In addition, water pollutes through high amounts of synthetic fertilizers [15], chemical pollution and acid [16]. For various reasons, water resources are in short supply on a daily basis. So, there is a demand of displaying the eco-friendly constraints not including the amount of moisture present in soil, measuring the temperature of soil and the most important factor i.e., the soil moisture [11], air temperature, air strain, wind velocity, pH, salt level, turbidity, groundwater, water required within the plant. based totally on the effects of these requirements the farmer irrigates the field best when vital.

### *C. Using of Wireless Sensor Network in the Field of Farming*

A refined organization of water plays an important role in agriculture. A wireless water-based irrigation system provides the best solution for increasing water consumption [19]. By using this, the farmers can be suitably able to use the best possible way for evading the loss of the common water for irrigation [4] and to prevent water loss [20]. Via data acquisition, AIS will continue its task of automatically opening or closing [22] engine [13, 21] irrigating the field, if necessary, water occurrence in the ground. AIS is more capable of handling the precious liquid during an unconditional year such as rain [23, 24] by distributing water evenly across the farm. In this paper. Our main intention is to offer a better considerate of existing investigation in this field. The rest of the paper is organized as follows. Here in this, there has been a have discussion about the technology that we are using in this, is good for the farmers who will use them in the future.

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## II. LITERATURE SURVEY

One of the most important things for the people of villages are cultivation. Nowadays, by means of the expertise, the situation is thinkable and regulate the ecological conditions such as soil moisture, temperature, wind speed, air pressure, salt, turbidity, humidity etc. Automatic irrigation is done using a solenoid valve and irrigation in rural areas will be improved early. There has been a lot of research and development in the agricultural sector and is growing rapidly speed. The need to increase yields directly depends on soil pH, soil temperature and variety some features that have become a major issue the interest of researchers. Using electric sensors, the soil moisture was the same found, based on where the land was irrigated. This appears to have reduced water loss by 53% [3]. Drip irrigation has been shown to be as beneficial as this reduces water wastage by direct installation water and fertilizer in the root zone. Microcontroller based on irrigation system using sensors have it has been a major development in agriculture. [4] [11] Another important parameter to consider watering the respiratory rate of the plant. Abbreviated as ET, evapotranspiration water the respiratory rate of the plant is highly dependent at temperatures, humidity, wind speed, crop congestion etc. [5]. Using solar energy and available thermal to improve battery life can be monitored [6].

| S.NO | NAME OF THE AUTHOR | ALGORITHM USED | EXPLANATION OF ALGORITHM | Result |
|---|---|---|---|---|
| 1. | M.Nesa Sudha et al. | TDMAbased algoritms. | Uses the algorithm for taking the soil information. | The system was able to find out the data |
| 2 | Anuj Nayak et al. | routing algorithm named DEHAR | Taken the cover total battery power. | Batteries were not able to give that amount of output. |
| 3. | Man Zhang et al. | Maximum parameter | analysis the temporaland, the variability of the soil which it behaves after the moisture performance. | Able to find out the moisture content. |
| 4. | Joaquin Gutierrez et al. | Solar cell to the solar panel cells | Taken the extend overall batteries power. | Solar cell was giving the output very fast |
| 5. | Sherine M.Abd El-kader et al. | The technology of sensing was used. | It is a ranked based routing protocol. | Clustering failed |
| 6. | B. Balaji Bhan et al. | Introduced a mechanism where these were mainly concentrated on moisture. | An intelligent remote system consists of wireless sensor nodes . | The result was not coming very fast. |
| 7. | Sbrine Khriji et al. | Sensor nodes for real monitoring and control of irrigation system. | An ultra-low power wireless module for monitoring applications. | The test was passed that was able to find out the measure of soil. |
| 8. | Yunseop Kim et al. | It is usually seen as real time monitoring and control of variable rate irrigation controller | The sensor nodes measure environmental parameter and transmit data. | The test was passed. |
| 9. | T.C. Meyer et al. | Shown the diagram of smart sprinkler system using this | This technology gives the total presentation of the data. | Test failed |
| 10. | Nelson Sales et al. | Introduced the cloud based WSAN communication system. | The introduced device that is been explained very well. | NA |
| 11. | K. Satish Kannan et al. | Here it is talked about a system where it can be very useful. | Cameras used tocapture live videos of the farm. | NA |
| 12. | Mauro Martinelli et al. | It is seen here as the users that gives real time data that are been collected by them. | Each node collect data concernedwith the voltage. | Test passed |

Fig: Literature Survey

## III. CONLUSION AND THE SCOPE OF THE TECHNOLOGY

In the above paper, we have examined different initial technologies correlated to our research and irrigation in gardening. Alike little control of batteries is a chief delinquent in this. Numerous skills are been there as sensor batteries like harnessing wind energy, photovoltaic panels. Energy efficient routing protocols used to manage it.

The proposed plan helps to increase water availability resources and reducing inorganic use fertilizer. Save costs and requires a minimum care. The use of online surveillance using mobile networks facilitates the ease of use of available technology. It can also be used applications such as temperature monitoring. The future is the scope of research in the field of agriculture diversity with the introduction of new technologies. I dairy and organic farmers use RFID to work to track the health of each animal. Development of hydroponics sensors [10]. In addition, the development of wireless and IoT networks has led to various developments in the agricultural sector. A few of the most advanced agricultural technologies include autopilot tractors, GPS tractors and sprays, laptops, laptops and smart phones set to be overcrowded with farm tractors, irrigation with smart phones, irrigation plants-based request via twitter message by an application that uses IoT, to monitor plants .

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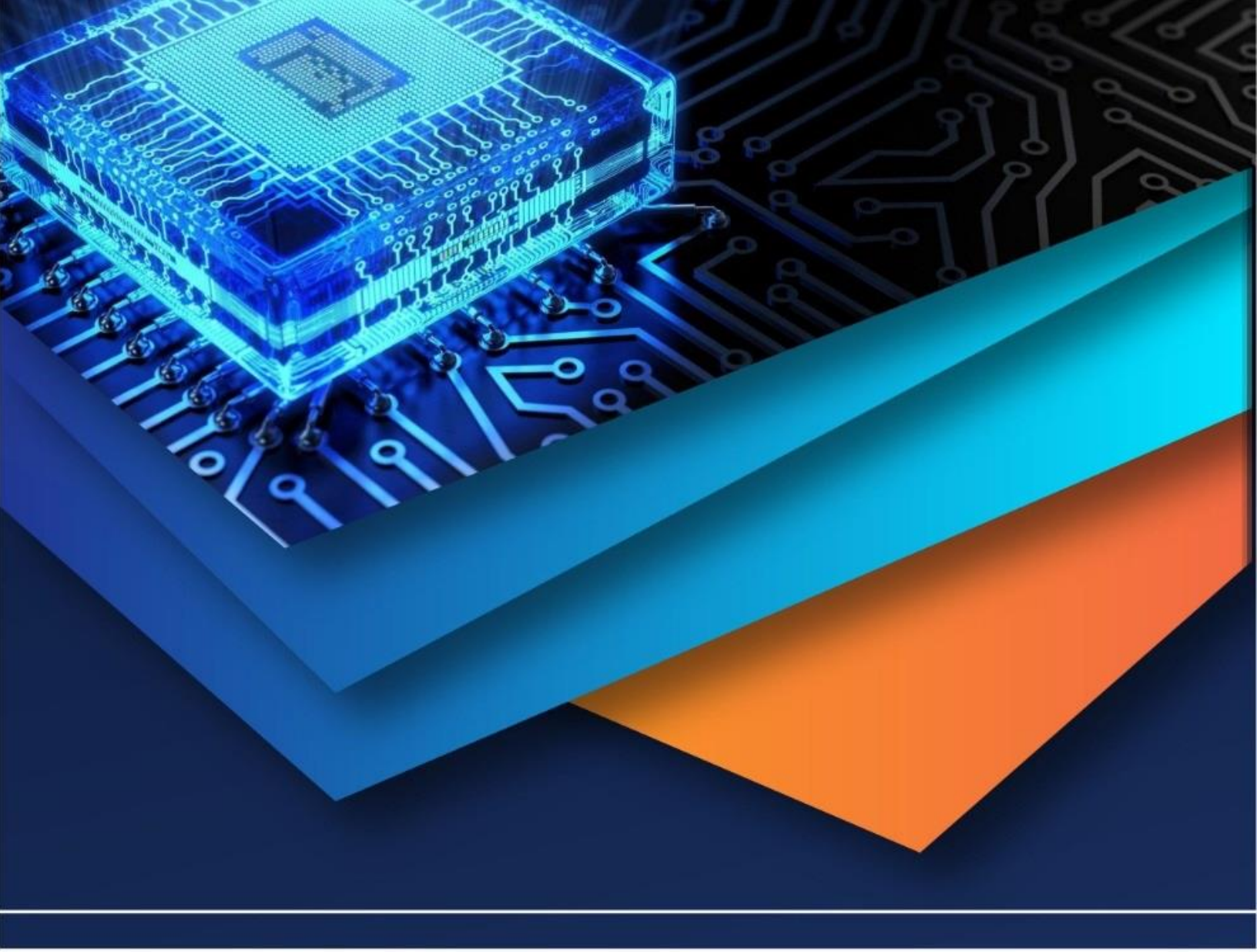

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