Automatic Plant Watering System using NodeMCU

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ABSTRACT:- Watering is an important cultural tradition and a labor-concentrated task. Watering systems decreases the burden of getting water to plants whenever they require it. When and how much to water are two important aspects of the watering process. To make the gardener work easily, the smart automatic plant watering system is been created. This project aims at achieving automation for the purpose of plant monitoring and irrigation system using Node MCU. Sensors used for observing the environmental conditions surrounding the plant, whose outputs will be obtained on an Android-based mobile application. The updates of the atmospheric conditions like temperature, humidity and soil moisture can get from any place in the world, as the data shared on the cloud platform.

Keywords: Android Application, Node MCU, Sensors, internet.

I. INTRODUCTION

During day-to-day work, number of people often forget to water their plants and thus it becomes difficult for them to keep their plants healthy and alive. Also it is a challenging for farmers to nurture their farms and manage watering of plants during shortage of water. So, we thought that it is necessary to implement the smart automated watering system which will take care of plants considering all the different parameters of home gardening system (for system based on household purpose) as well as on large scale (for the system based on agricultural farms on commercial level) and helps them to grow healthy. Also technology can help people in cultivating plants, not just by high tech mechanization but also through digital reporting (such as to notify the user with the current status of plant is important to note.)

Plants are very useful to all human beings in many ways. Plants helps in keeping the environment well by cleaning air naturally and producing oxygen. Many people like to have plants in their backyard. But due to civilization and insufficiency of place many people used to grow plants in a mud or dirt, pot and placed on the windowsill. This plant depends on conventional breeding watering, and provide the right amount of sun to sustain life and growth. In busy routine of day-to-day life, many people forget to water their plants and due to this plants suffers many dieseas and ultimately died. In addition, the world's biggest problem in modern society is the shortage of water, agriculture consumes large amount of water. It is necessary to use the water in efficient way. Thus a system is required, to manage this task automatically. Automated plant watering system estimate and measure the existing plant and then supplies desired amount of water needed by the plant. It decreases the additional water use as well as keeping plants healthy.

II. Literature Survey

A)Automated Irrigation System using a Wireless Sensor Network and GRPS Module.

Automated irrigation system using WSN and GRPS Modules goal is to optimize the utilization of water for agriculture crops. This technique consists of distributed wireless sensor network with soil moisture and temperature sensor in WSN. Microcontroller is the base of the system. WSN is used to save water and for automated irrigation purpose. Automated irrigation system powered by the photovoltaic panel. Readings are taken live by soil moisture and temperature sensor.

GRPS module help to connect with web application and hence irrigation decision can be done from any remote location. Automated irrigation system uses only two parameters of soil like soil moisture and temperature and other parameters humidity, light, air, moisture, soil ph value not taken for deciding. Maximum profit scenario isn't considered as per crops type and available water.

B) Automatic Drip Irrigation System using Wireless Sensor Network and Data Mining Algorithm

Data mining algorithm are wont to take decision on drip irrigation system. Automated drip irrigation system having WSN placed altogether over farm and different sort of sensors like soil moisture sensor, wind direction, wind speed, soil temperature gives reading to control station and base station. WSN uses unplanned network which provides self configuration and adaptability. Sensor data will be send to the base station and this data is received using zigbee. Data processing is completed at base station for deciding. Data mining algorithm is employed to require decision on data from sensors to drip. All observation are remotely, monitor through web application. Data changes as per geological and soil condition system doesn't work suitably. Algorithm works on previous data set for deciding if any

attribute isn't frequent result's zero. It is difficult to take decision on atmospheric changes. Web application is used for only observation purpose.

C) A Crop Monitoring System Based on Wireless Sensor Network

Wireless sensor network crop monitoring application is beneficial to farmer for precision agriculture. The application monitors the entire farm from remote location using IOT. Application works on sensor network and two sorts of nodes. Energy saving algorithm is employed in nodes to save lots of energy. Tree based protocol is employed for data collection from node to base station. System having two nodes sensor node which collect all environmental and soil parameters value soil moisture, temperature, air, humidity, light, etc. and second node contains camera to capture images and monitor crops. The controlling system is not present for application.

D) Wireless sensor network with irrigation valve control

Wireless device network with valve management unit is developed with mechanism hardware and software packages. Irrigation is management by mechanism. Net application is employed for manual management and schedule irrigation temporal order. Meter indicates the necessity of water. Node unit contains soil wetness device and mechanism. Two manner communications turn up from mechanism to node and base station. Packet with management commands are sent between node and mechanism. Mechanism management magnet valve relying upon metre price and planning temporal order for water system. Packet loss between node and actuator communication degrade performance of system. Power requirement for actuator and node unit is high.

E) Automated Intelligent Wireless Drip irrigation Using Linear Programming

Automated intelligent wireless drip irrigation system uses applied mathematics to urge maximum cash in on available water and crop water requirement. This technique calculates water requirement of various crop. Available water and maximum profit scenario for various crop field. Decision network helps to require decision of irrigation for various crop field. System use applied mathematics for max profit on defined resources. It causes problem where constrain and objectives aren't define. In real time situation object and constrain aren't predefined then this method can't be used.

III. CONCLUSION

We come to the conclusion that as water is the most important for plants, therefore our project presented a smart watering system which could be deployed in gardens or fields. Our automatic plant watering system operates perfectly and sends all the sensor values to ThingSpeak.

This data is then send to app. Automation has been implemented organised properly in this system

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