A Literature Review On Automatic Watering Of Plants

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Abstract—The basic idea of this paper to show how the normal working of the automatic watering of plants takes places for such the normal plants . In this paper we are only working on the normal plants not specific to any of the plants and not specific to any category of the plants . We will work on the normal soil. Soil moisture will be related to water content which a factor will be affect on the growth and development of the plant . Then the normal processing of watering plants is generally done manually regardless of the how much volume of water needed by plants. Already many research paper have been discussed in some of the paper and the system are also being created to detect the soil moisture level. Just for taking the area of plants we are normally taking the ratio 25% only. If soil moisture value is detected on 25% - 30%, then the device activates the watering function by opening the valve from the solenoid valve to drain water to the pipe. When the soil moisture detected more then 50% , the device stops the watering function. platform, used to display moisture percentage data in graphical form, so the system has the potential to be used in the process of watering the plants automatically.

Keywords—: *Automatic watering system, Arduino UNO, Microcontroller, Soil moisture, Sensor.*

Introduction

If we look at the current scenario of the country the population of the country is going to increase day by day and the number of plantation of trees is going to decrease if there are the some trees but maximum number of peoples are not having are not having the enough time to take care of there plants which are at there home or the people which have planted who have planted in the garden of there house or some little field area . So in this review paper we will work on the automatic watering of plants[1][2] . As the number of population is increasing is increasing so we have to also increase the number of plants which give us more oxygen so if the large number of people will be there so we will need large watering system so with the help of the smart watering system we can provide the sufficient amount of water. The process of providing the water to the plants can be manually as well as by using smart devices. This research is related to the design of a prototype device and plant watering system that functions automatically.[6] The prototype of the device made emphasizes the measurement of soil moisture content for control the flow of water while watering plants. The only purpose of this research paper is that the plant watering system has the ability to control the water content required by the plants based on the soil moisture.

Literature survey

As per reading the different types of the research paper the most of the research paper show that we that connect them with the help of the GSM module and with the cloud also but if we see the normal we can just implement it with the moisture sensor also[4][8]. For the normal people we have to make it cost effective also so that the people who want to use this types of the system in their houses so that they can use it cheap and the best method to save the plants life . While using the cloud also it will be little bit costly. The simple means how much advance we will make it, it will become that much costly so we have try to implement in a simple manner .

[9]An estimated 26 million people are worldwide affected by droughts every year, and they are the most severe problem to livelihood and crops in nearly every part of the world. So due to the lack of the water on the places of the earth the watering system has been generated . It is a slow process disaster occur by the lack of water , which result in a water shortage. Lack of water has been becoming the creating a serious impact on health, agriculture, economies, energy and the environment The research provides key insight on the effects of climate on agriculture as rules should be prepare for the number people should do this agriculture so that the water decency can be maintained. The study, which evaluated the effect of 1,800 weather disasters on domestics crops like rice and wheat, suggests that the effects of drought worsened and are predict to continously to affect in the coming decades.[4] The study speculates that's because of more intense droughts driven by climate change, increased vulnerability to drought and changed reporting methods, but couldn't confirm any individual factor with certainty. Developing countries are experiencing some of the most severe crop loss due to scarcity of water and heat, according to the research. Crop production in North America, Europe and India faced nearly a 30% decline thanks to drought and extreme heat, compared to less than 20% in South Africa and Latin America and Europe . Many Researchers of the world have given there attribute to a difference between the agricultural methods employed in the different areas. Farmers in countries tend to growing crops uniformly across large areas. Water shortage has deeply affected these crops uniformly. Growing a wide variety of crops in a given region in the countries has mitigates the risk that all crops will be clear out due to a given weather event. The huge impact of water crisis and heat on food production has been a hot button topic in development countries as the scientific and climate

change are growing very fast . A recent study found that climate change could drive an 10% decrease in crop yields and a 15% increase in price by 2060 if countries do not control their greenhouse gas emissions.

Tools and methods

The construction part shown in the fig 1shows that how can we do the connections and things are required to make advanced system . Doing the connection is very quite simple and anyone can make it and use it. The only need is of basic knowledge of hardware and electronics .

1) Power Supply (12v)
2) Relay Module
3) Microcontroller
4) Amplifier Circuit
5) Soil Moisture Probes
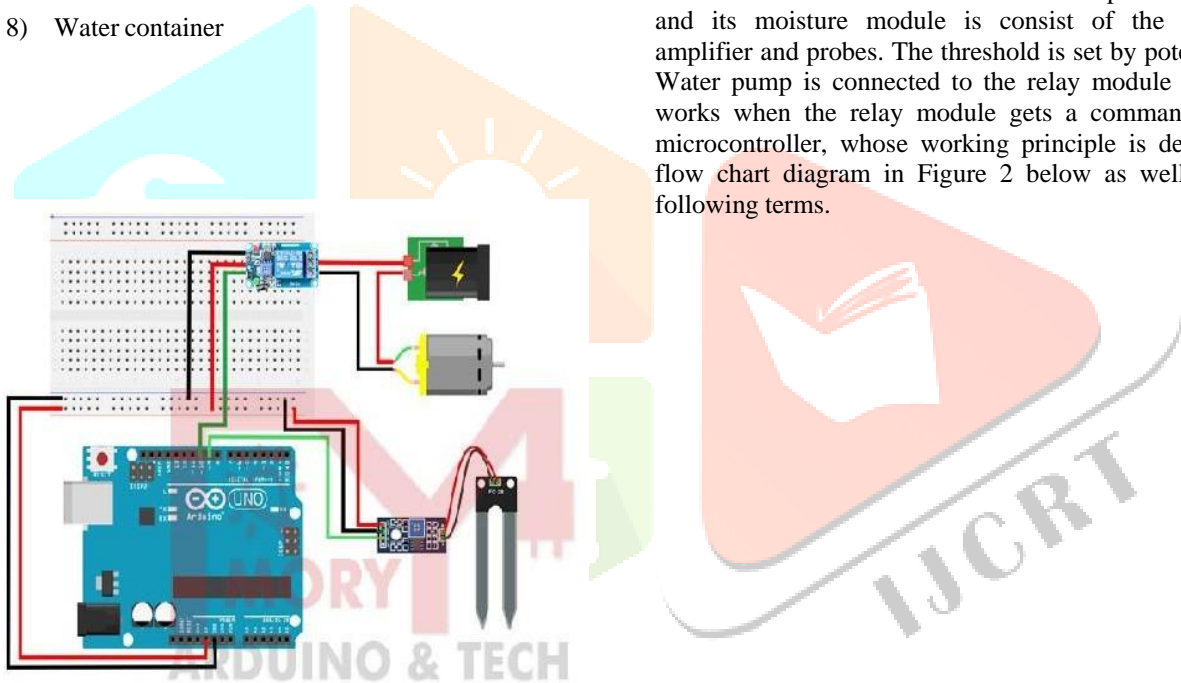6) Plant in the flowerpot
7) Water pump
8) Water container

Fig1

Today there are many people who are making it in the different form and different type every one is making it for there own use and work. But this is the simple implementation process which can be done as easy it is.

A. *Working*

[3]The main working principle behind this system is in connecting the soil moisture sensor, which was previously embedded into the plant, to the Arduino microcontroller, which is also connected to other hardware components are shown in Figure 1. The accuracy of the soil and its moisture is done by the hardware sensor which will send the next information and parameters regarding the soil to the controller, which controls the water pump. Once the level of soil goes down below a certain value, the controller sends the signal to the module which then runs a water pump and amount of water is dropped to the plant. Once the required amount water is delivered, the pump automatic stops doing its task. [5]Power supply has a task to power the complete system and the recommended voltage should respect the input supply range for the microcontroller, that is, from 7V to 12V.The connection is done in such a manner that the switch is ON so the aurdino UNO is lighten up and as the switch is on the working process start doing its task. Since the complete system should be embedded in a small box, Arduino UNO is a perfect microcontroller for this purpose because of its dimensions and its work performance. Soil and its moisture module is consist of the two parts: amplifier and probes. The threshold is set by potentiometer.. Water pump is connected to the relay module and it only works when the relay module gets a command from the microcontroller, whose working principle is described via flow chart diagram in Figure 2 below as well as by the following terms.
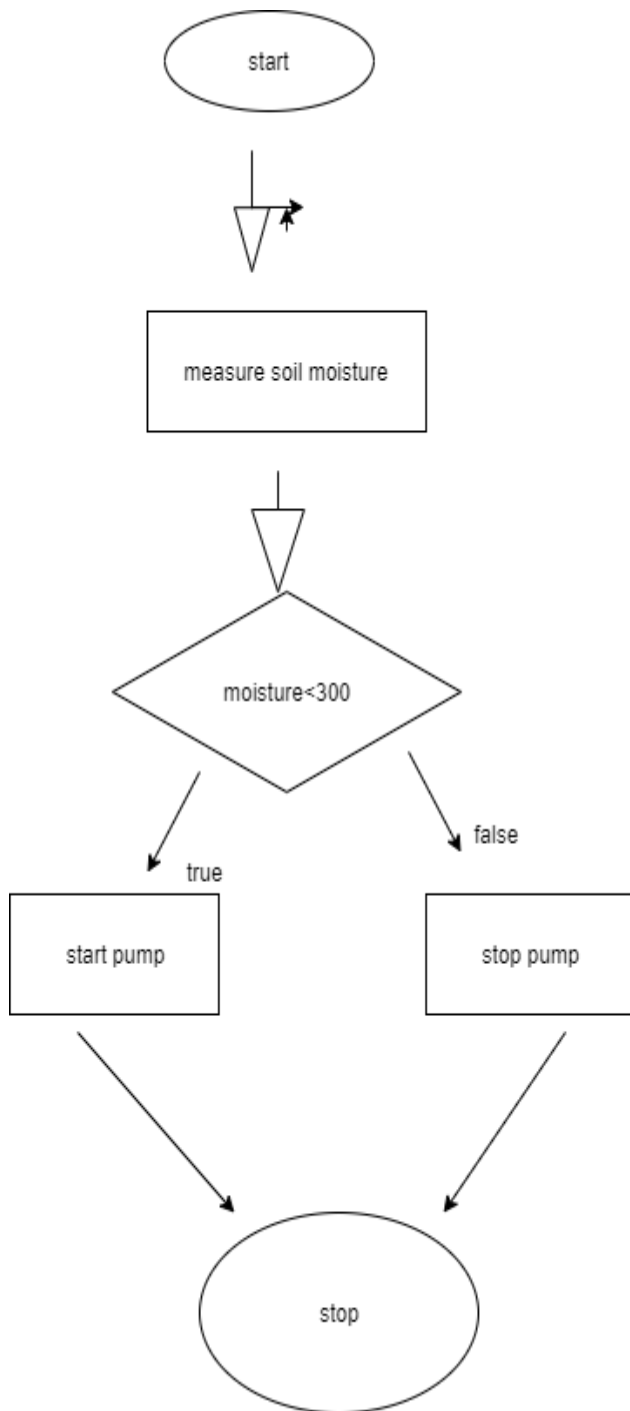
Fig 2

maintained its homeostasis in desired, regular and health without any scarcity is observed. Whenever and wherever a water is needed for any such kind of thing it is automatically sense by the sensors and controller they generate and send a quick signal to the watering pump to start giving water to the plant till the requirement is done completely.

CONCLUSION

[3]Although it seems to be more demanding and challenging, there are many other possibilities like creating complex connections of plants of similar variety.Also, using more than one sensor is another idea for an experiment but there are some   many other experimental and using solar also for the watering and timer for setting irrigation system etc. [7]However, independently of the way used to construct it, there is no doubt that this system can be very helpful in solving many problems, from those that seem harmless . Now by using this system, it is now possible to provide the proper amount of water which will be releasing during the process of watering the plant. Although it can be very dangerous for human being to survive for the middle man who are not much aware of the technology and science are the people who are using this system will have the big benefit of using this system.

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Results

The results of our experiment in the form of the overall representation of our tested automatic plant watering system based on Arduino microcontroller and sensor technology[1]. As it can be concluded from the picture below, the system has been designed and tested successfully in a successful manner. Also, functionality of the system, as well as the overall behavior of the plant, has been observed in the next 30 days and the results were great as expected and desired. As result of our observation we noticed that plant