International Journal of Future Generation Communication and Networking
Vol. 13, No. 3s, (2020), pp. 1559–1563

Automated Nursery Management System

Vijay Prashant Pawar ,Pranav Mukund Patil ,Mr.P.S.Hanwate
Department of Computer Engineering
NBN SINHGAD SCHOOL OF ENGINEERING, AMBEGAON (BK), PUNE.

Abstract

The pollution level is increased due to an increase in industrialization and Urbanization. Such increased pollution causes drastic and continuous changes in Moisture, Temperature, and Humidity. For small nurseries, one person may able to handle the nursery but in the case where the nursery is divided into several branches, it is essential to have at least one backup person who understands crop status, knows everything that needs to be done, and knows how to do these things. The extra person who handles the nursery in the absence of admin is a backup person which keep the track of nursery in absence of admin. Different Nursery managers have different personalities and Management Skills. Some general characteristics, however, are important to good nursery management. The effective nursery is one which uses less labor and which cannot be easily influenced by the climate. It is not that much easy to handle Nursery located at different branches. In some previous years that is in recent years, there is a canopy remote Monitoring System that Monitor Nursery remotely. In this System, we use different modules such as Temperature sensor, Moisture Sensor, Humidity Sensor and Light sensor with different types of controller, GSM, ADC, etc. All the above-mentioned modules are used to sense the different Nursery parameters such as Temperature, Moisture, and Light Intensity. Those all sensors are connected to the controller for the automatic monitoring of the Nursery Appliances to control Temperature, Moisture, and Light Intensity level. The output is in the form of an Analog signal which needs to be converted into Digital signal. For the same analog to digital converter that is ADC is used.

Keywords*: ADC, Light sensor, Moisture sensor, Temperature sensor and Microcontroller.*

I. INTRODUCTION

Nowadays output, profit, and efficiency of Nursery is monitored and controlled by different factors. Among those all the factors Temperature, Humidity, Light, and Moisture are some important factors. By considering such factors I have built an automated **nursery Management System using IoT**[6]. This system is Sufficient for good Plant growth. Atomicity is another important part of this system.

All the appliances are automatically controlled that is turned ON and OFF using controller Atmega328. WIFI module is used in this system to control the information of climate change on plants[8-9]. This system is also able to demonstrate and Monitor the climatic changes which affect the quality and productivity of plants. The considerable Motive of this system is to send the information about the Temperature, Humidity, Light, and Moisture to the admin of nursery with the status of different Nursery controlling appliances Such as Fan, Water Pump, and Artificial Light Automatically. The Temperature sensor used in this System is used to sense the temperature of Nursery and if it detects that the current temperature is less than the critical temperature then the fan turns ON automatically and if the current temperature is coming in normal range then Fan Turns OFF automatically. Similarly, Light sensors are used to sense the Light Intensity[10 11] and if Current light intensity is less than the critical level then Artificial Light turns ON automatically and after coming into the normal range of intensity Artificial light Turns OFF automatically.

ISSN: 2233-7857 IJFGCN

The 100Watt bulb is used as an artificial Light source. The output of all the sensors is connected to the IoT to Monitor the Nursery. Same for the Moisture sensors it senses the Current Moisture level in the soil and if the Current Moisture level is below the critical level then the Water pump turns ON automatically and if the current Moisture level is exceeding the critical level then Water Pump Turns OFF automatically.

II. RESULTS

The main purpose of this system is to collect information such as Temperature, Humidity, Moisture, and Light and send it to the user by providing the User interface (IoT) and for the same, this system uses Modules such as ESP8266 Module. The is designed using different sensors such as Temperature sensor, Light sensor, Moisture sensor, and Humidity Sensor to get relevant information.

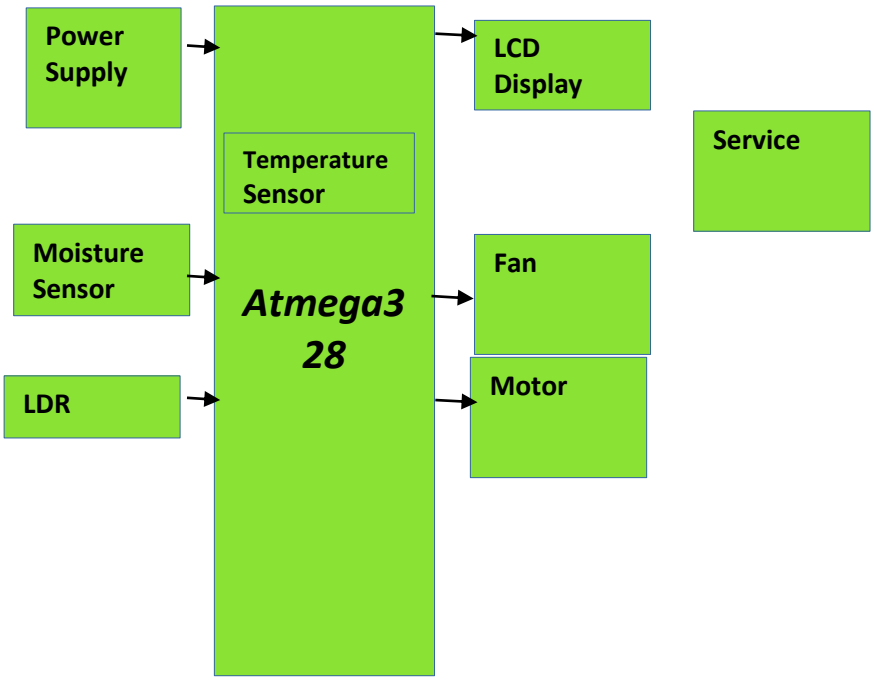
All the sensors have continuously changing values and controlling such values controller such as Atmega328 is used. As the temperature sensor senses the temperature it sends to the controller then the controller checks whether the temperature is below the critical temperature or cross the critical temperature level And accordingly Monitors the status of Different appliances such as fan etc. In the case of Light sensors also Intensity is checked by the controller and if the intensity is less than the critical level then the controller automatically Turns On the Artificial light source(100Watt bulb) vice versa if Light intensity is cross the Critical, Normal Intensity level then Bulb Turns OFF automatically. Now there is one another parameter that is Moisture it is a water level in Soil. To check the Moisture, Moisture sensors are used which are connected to the controller. Moisture sensor senses the Moisture in the Soil and sends it to the controller. Now controller checks whether the current Moisture level is less than or exceeds the critical water level. If the Current Moisture level is less than the critical level then the controller automatically turns ON the Water pump and similarly if Moisture level crosses the critical level then Controller Automatically Turns OFF the Water pump. This system is divided into two parts or the Sections

I) Transmission Section
II) Receiver Section

Transmission Section consists of all types of sensors such as light sensor, Temperature Sensor and Humidity sensor that is all sensing devices. The receiver section consists of ADC (Analog to Digital converter) and Display devices like LCD.

ISSN: 2233-7857 IJFGCN

III. BLOCK DIAGRAM



IV. ADVANTAGES

1. Soil Fertility is increased.
2. Increased Productivity.
3. Water Consumption is reduced.
4. This System is easy to implement.
5. This is a very Cheap System.
6. This system is operating at DC level So the Power consumption is very low.
5. This night operated system.
6. Manpower that is labor and time is reduced.
7. Deduction in time and space complexity.

V. CONCLUSION

This System Describes the implementation of a module that Consists of Temperature Sensor, Moisture Sensor, Humidity Sensor and the Light sensor for automatic control and Monitor of Different Nursery parameters such as Temperature level, Moisturelevel, Humidity level And Intensity with Increased Output and Productivity.

VI. FUTURE SCOPE

1. Image processing in Agriculture

Image processing is the concept in which the Images are processed by using digital computers. In the Agriculture field also, different diseases are identified by observing the shape and color of siblings' sleaves. So, image processing plays an important role in the Agriculture field[7].

1. The necessity of Nutrients and irrigation.
2. Detection of diseases.

ISSN: 2233-7857 IJFGCN

3. Sorting of diseases.
4. Detection of Pesticides and their location.
5. Scheduling of Harvest.
6. Pre-seasonal Soil Conditions.
7. Pre-seasonal environmental condition.

2. Agricultural Robotics

In the current century All the agricultural purposes are done by Human Power which is time-consuming but in the future near about 2050 agricultural Robots are comes in picture.

An agricultural robot is a robot that is deployed for agricultural purposes. The concept of agricultural Robotics includes the following.

1. Weed Control.
2. Cloud seeding.
3. Planting seeds.
4. Harvesting environmental Monitoring.
5. Soil Analysis.

REFERENCE

1. "The United Nations World Water Development Report 3", The United Nations Educational, Scientific and Cultural Organization (UNESCO), Paris, France, 2009.
2. F.S. Zazueta, A.G. Smajstrla And G.A. Clark, "Irrigation System Controllers", University of Florida, Institute of Food and Agricultural Sciences, Fl, Usa, 2008.
3. A.G. Smajstrla, B.J. Boman, G.A. Clark, D.Z. Haman, D.S. Harrison,F.T. Izuno, D.J. Pitts And F.S. Zazueta, "Efficiencies of Florida Agricultural Irrigation Systems", University Of Florida, Institute Of Food And Agricultural Sciences, Fl, USA, 2008.
4. www.Precision.Agriculture.Org.Html.
5. M. K. Haefke, S. Mukhopadhyay And H. Ewald, "A Zigbee Based Smart Sensing Platform For Monitoring Environmental Parameters",Ieee Conference On Instrumentation And Measurement Technology, Pp. 1–8, May 2011.
6. P. S. Hanwate Narin Meher "Smart Toll Collection System based on IoT" International Journal of Science Technology & Engineering Volume 3 Issue 12 June 2017.
7. P.S.Hanawate,Aishwarya Patil "Security by user through application to lock/unlock machine by face detection " International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056 Volume: 04 Issue: 02 Feb -2017
8. Amol V. Dhumane, Rajesh S. Prasad, "Multi-objective fractional gravitational search algorithm for energy efficient Routing in IoT," Wireless network, pp. 1-15, August, 2017.
9. Amol V. Dhumane and Rajesh S. Prasad, "Fractional Gravitational Grey Wolf Optimization to Multi-Path Data Transmission in IoT", Wireless Personal Communications, September 2018, Volume 102, Issue 1, pp 411–436.
10. Shwetambari Kharabe, C. Nalini," Evaluation of Finger vein Identification Process", International Journal of Engineering and Advanced Technology (IJEAT), International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249 – 8958, Volume-8 Issue-6S, August 2019.

ISSN: 2233-7857 IJFGCN

11. Udayan Birajdar, Sanket Gadhave, Shreyas Chikodikar, Shubham Dadhich, Shwetambari Chiwhane, "Detection and Classification of Diabetic Retinopathy Using AlexNet Architecture of Convolutional Neural Networks", Proceeding of International Conference on Computational Science and Application, online 05 January 2020, pp 245-253.

ISSN: 2233-7857 IJFGCN