Journal Publication of International Research for Engineering and Management (JOIREM)
Volume: 01 Issue: 04 | April-2023

IOT Based Smart Interactive Talking Plant

Vighnesh Gajula, Kunal Khadke, Pratik Kokate, Bhushan Sonkamble

PROF. Dr. Anand V. Satpute

Department of Electrical Engineering, Sandip Institute of Technology And Research Center,Nashik

Abstract The aim of this work is to bring the Artificial Intelligent (AI) concept in a new level by introducing it to living organisms like plants. In this system we provide a concrete scenario where an augmented plant, an E-Plant can be incorporated in a ubiquitous computing environment in order to work together with other augmented objects, artifacts, in order to provide to the environment status of its condition. The IoT is the addition of Internet connectivity into physical devices and everyday objects. Embedded with electronics, Internet connectivity, and other forms of hardware (like sensors), these devices can interact with others over the Internet, and they can be remotely examined and controlled.

Keywords:

Artificial Intelligent, Internet of things (IoT)

Introduction:

Overview:

This IoT project describes how to build a project that monitors the plant health status by

keeping contact with the owner. As a result, the project wants to check some environment parameters like temperature, humidity and light intensity that have effects on the plant. In addition, the project wants to retrieve the soil moisture and at the end of it, tells the owner what it feels by producing a sound produced by a voice enabled device attached toa computer. In addition, a mobile application is possible for the plant to be able to produce test messages, tweets or Facebook posts that tell its owner how thirsty it is by just sending a tweet and of course sending the owner a thank you reply after watering it or removing it from the heat of the sun. More on building an IoT project that monitors plant health status Future plans will be an attached webcam for further monitoring.

1.1 Problem Definition and Objectives

The goal of this project is to encourage happy relationship between plants and people as a lot of people are afraid of plants. Not they are not green handed. The idea of taking good care is a responsibility. This makes it possible for them to have a plant in their lives. As arduino came into the picture in bringing a better solution for plant care.

LITERATURE SURVEY:

[1] Development of smart talking plant with voice recognition function: Zaragoza, M. G., Kim, H. K., & Hwang, H. J.

In this system used arduino which allow monitoring plant. The focus of system is to sensor value stored then this value going send user side on their mobile application as well as in terms of SMS. For coding purpose they used JavaScript.

[2] Chatting with Plants (Orchids) in Automated Smart Farming using IoT, Fuzzy Logic and Chatbot: Wiangsamut, Samruan, Phatthanaphong Chomphuwiset, and Suchart Khummanee –

In this system they introduce a model that interact with plants cultivated in automated farm system based on internet of things (IoT) and fuzzylogic. The communication of plants and humans apply chatbot algorithm for sending/receiving messages. The messages are processed by natural language processing (NLP) o parse and interpret the

meaning of commination. The results from the evaluation show the average accuracy of chatting between the user and the orchid.

[1] Monitoring of Hydroponics System using IoT Technology : Patil N. Patil, S., Uttekar, A., & Suryawanshi, A. R. –

The focus of this system to overcome the problem related agriculture for that they implement hydroponic system using IoT technology using Node MCU. The major feature is water driven agriculture system that will eliminate need for soil. With this hydroponic automated system, the crops are supplies with water and nutrients depending on sensor feedback such as humidity and temperature, pH sensor and electric conductivity circuits.

[3] IoT plant monitoring system for mental health therapy : Karuna, Yepuganti & Awasthi, Sonalika & Sharma, Raghav –

In this paper, they propose IoT enhancing the experience of personal gardening as method of therapy for mental health patients, given a belief in its role in person mood and general positivity. The system continuously sense and monitors the state of indoor plant through different sensors. The user notified of the plants need for water, sunlight etc. through generated notifications from channel over cloud in real time. They used Raspberry pi

SOFTWARE REQUIREMENTS SPECIFICATION

3.1 Assumptions and Dependencies

- Smart interactive system save money and energy
- It will change the way we live and work
- It handle daily routine problem
-

3.2 Functional Requirements:

The major feature is water driven agriculture system that will eliminate need for soil. With this hydroponic automated system, the crops are supplies with water and nutrients depending on sensor feedback such as humidity and temperature, pH sensor and electric

conductivity circuits.

3.3 External Interface Requirements

3.3.1 User Interfaces

For user interface either use can used android application or web application.

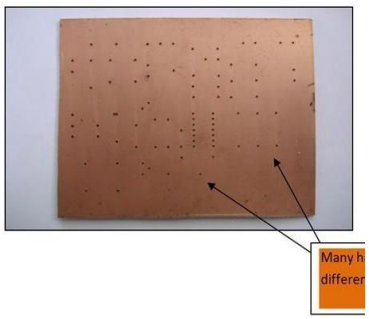
3.3.2 Hardware Interfaces

We will interface Node MCU controller with LCD 16x2, DHT11 sensor, moisture sensor, relay, DC pump motor, voice module and MIC. We will interface all components with a Node MCU microcontroller. To provide 5V DC supply. We used transformer and rectifier circuit at the input side of project.

3.3.3 Software Interfaces

We have chosen windows 7 operating system for its best support and user friendliness. To implement the project we used Arduino IDE, Altium and OrCAD software.

PCB DESIGN:



properly placed in theirsocket. so that there is no pin bending of IC PCB Cleaning & Trimming:

After drilling process PCB is cleaned in running water. The layer of Fecl3 is removed. To remove paint turpentine is used. Now the PCB board is ready for component mounting.

After mounting the components inspect all solder joints by eye or using a magnifying glass. Check them with a continuity tester make sure that there are no dry solder and no track short circuited by poor soldering. Insure that the position of all components is as per the circuit diagram check that any links needed are present and that they are in the right position to keep the desired configuration. Check all IC's are properly placed in their socket. See that there is no pin bending of IC.

6.1 Overview of Project Modules

In the first part of this IoT project, we will search how to use sensors to collect environment information using Arduino and how to send this information to the cloud. In addition, in the second part of IoT project, we will search how to enable triggers on the sensor values stored. Moreover, we will send alert to user smartphone when some parameter value is out of the range. This project describes how to build a smart plant monitoring system that controls the plant health status. This Smart plant monitoring system based on IoT can be accessed remotely using a browser so that it is attainable to verify the plant health remotely. The system is based on arduino for that purpose Node MCU microcontroller used. On system side, the data is collecting from moisture sensor and humidity sensor, it will monitor plants soils and environment temperature then all data will send it to Node MCU. If the temperature High and soil water level get low or high then it will give notification to user in terms of voice. On user side, user has to use android app or web application. User will take action accordingly the notification.

NODE MCU

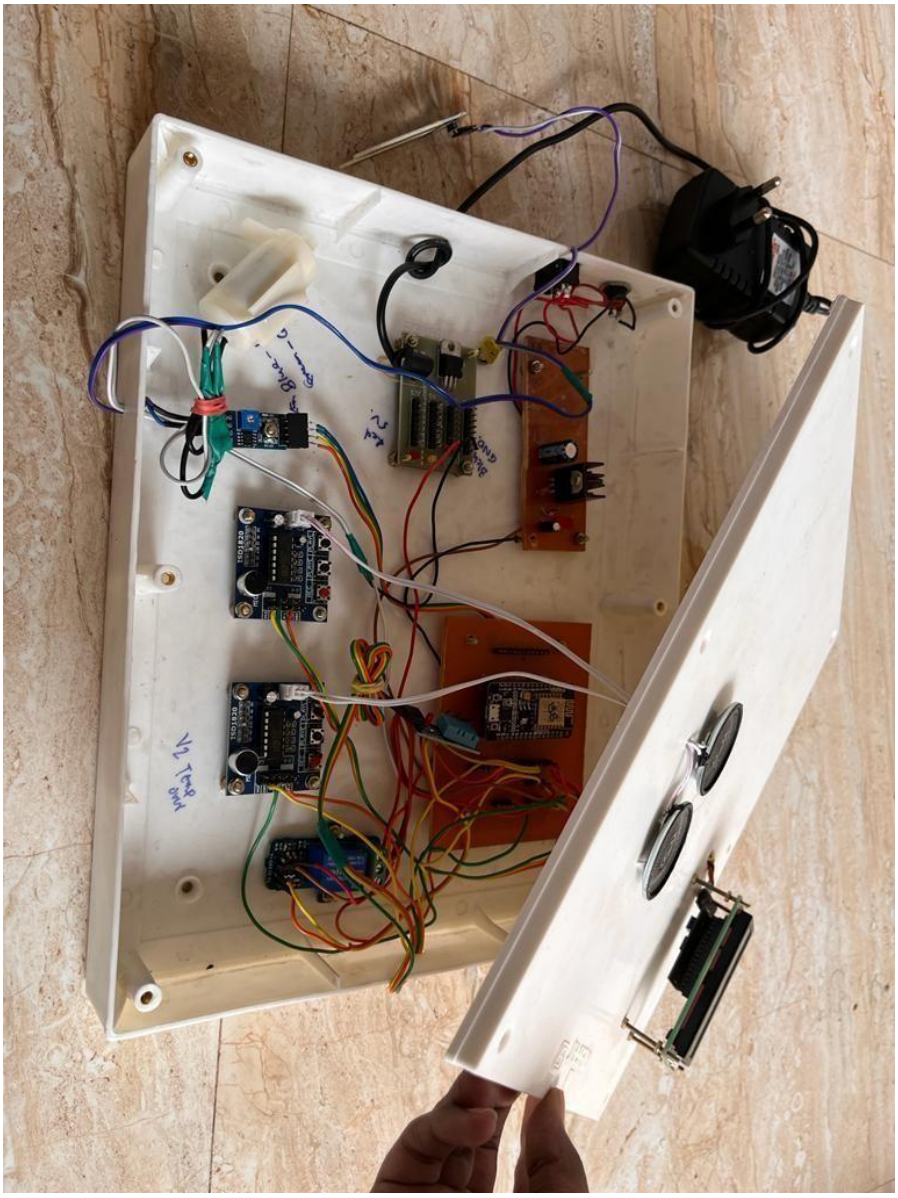
Features:

- Operating Voltage: 3.3V.
- Input Voltage: 7-12V.
- Digital I/O Pins (DIO): 16.
- Analog Input Pins (ADC): 1.
- UART: 1.

2. LCD 16x2

It can be configured to drive a dot-matrix liquid crystal display under the control of a 4 or 8 bit microprocessor. Since all the functions such as display RAM, character generator,and liquid crystal driver, required for driving a dot-matrix liquid crystal display are internally provided on one chip, a minimal system can be interfaced with this controller/driver.

RESULT:



CONCLUSION

This whole project mainly focuses on two results. The first result is to help user to update their plant health status accordingly with minimum requirements on environmental issues and mostly the basic to encourage happy relationship between plants and people as a lot of people are afraid of plants. Not they are not green handed. The idea of taking good care is a responsibility. This makes it possible for them to have a plant in their lives. As Node MCU came into the picture in bringing a better solution for plant care and protect plants and nature from being ruptured. And the second result of our project is to measure the humidity, temperature and moisture of the plant root and make the plant grow in a well suitable environment without the use of soil as per the concept of hydroponics. The user will receives the message regarding the status and thus helps in avoiding delay of plant watering and protect the plant to live in a suitable environment. We can be improved the system for visualizing sensor data, designing learning tasks and resources.

9.1 Future Scope

The idea of taking good care is a responsibility. This makes it possible for them to have a plant in their lives. As arduino came into the picture in bringing a better solution for plant care and protect plants and nature from being ruptured. And the second result of our project is to measure the humidity, temperature and moisture of the plant root and make the plant grow in a well suitable environment without the use of soil as per the concept of hydroponics. The user will receives the message regarding the status and thus helps in avoiding delay of plant watering and protect the plant to live in a suitable environment. We can be improved the system for visualizing sensor data, designing learning tasks and resources.

9.2 Applications

- Smart agriculture system

- For taking care of expensive plants and gardens

REFERENCE:

[1] Zaragoza, M. G., Kim, H. K., & Hwang, H. J. (2017). Development of smart talking plant with voice recognition function. In Proceedings of the World Congress on Engineering and Computer Science (Vol. 1).

[2] Wiangsamut, Samruan, Phatthanaphong Chomphuwiset, and Suchart Khummanee. "Chatting with Plants (Orchids) in Automated Smart Farming using IoT, Fuzzy Logic and Chatbot.", Advances in Science, Technology and Engineering Systems Journal Vol. 4, No. 5, 163-173 (2019) www.astesj.com Special Issue on Multidisciplinary Sciences andEngineering.

[3] Patil, N., Patil, S., Uttekar, A., & Suryawanshi, A. R. (2020). Monitoring of Hydroponics System using IoT Technology, International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056, Volume: 07 Issue: 06.

[4] Karuna, Yepuganti & Awasthi, Sonalika & Sharma, Raghav. (2021). IoT plant monitoring system for mental health therapy. AI & SOCIETY. 36. 10.1007/s00146-020-01140-6.

Tabuenca, B., Greller, W., Hernández Leo, D., Gilarranz Casado, C., García Alcántara, V., & Tovar Caro, E. (2021). Talking to plants: an IoT system supporting human-plant interactions and learning