Project Planning&Kickoff

Project ID   SPS_PRO_101

Application ID   SPI_API_20200002763

Project Title   Smart Agriculture System based on IoT

Internship ID   SB30089

Project manager   Porkodi M

Start date of project   14/05/2020

Duration   29 days

Status   On processing

Due date of delivarable 13/06/2020

Project scope   In IoT-based smart farming, a system is
                                        built for monitoring the crop field with
                                        the help of sensors (light, humidity,
                                        temperature, soil moisture, etc.).The
                                        farmers can monitor the field conditions
                                        from anywhere.

ABSTRACT

Agriculture is an integral part of Indian economy. Over 60% of Indian population based upon agriculture and one third of the income of nation arises from agricultural practices. Hence it plays a vital role in the development of the country. Various issues related to farming is continuously hampering the development of the country. Possible solution for these problems is to opt for modernized agriculture that comprises of modern trends. Hence, agriculture can be made smart using IoT and other technologies. Smart agriculture increases crop yield, decreases water wastage and imbalanced use of fertilizers.

The highlighting feature of this project is that it measures the different agricultural parameters affecting the yield. Secondly it sends all the data to the cloud where it can be further analyzed. Thirdly this project also contains an android mobile app providing an easy access of information to the farmer.
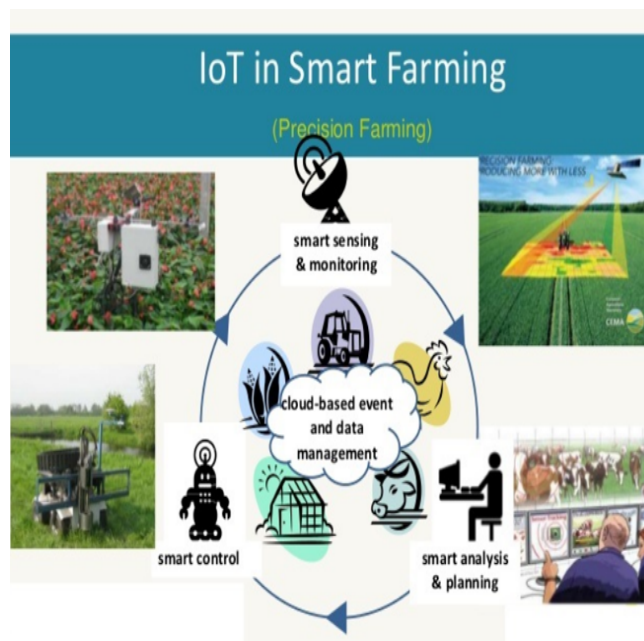
INTRODUCTION

Internet of Things (IoT) is the interconnection or network of physical devices that is interrelated computing devices, digital and mechanical machines, people or animals, objects that can sense, accumulate and transfer data over web without any human involvement. Everything is provided with unique identifier. It is a progressed examination and mechanized frameworks which uses detecting, organizing, enormous information and man-made consciousness innovation to convey total framework for an administration. Basically IoT is about extending the power of internet beyond smart phones and computers.

IoT has changed today's world. Smart cities, smart car, smart homes everything around us can be turned into a smart device with the help of IoT. It also has applications in agriculture, business sectors, healthcare, transport and logistics.

IoT IN AGRICULTURE

Internet of Things has capacity to transform the lives of people in the world in an efficient manner. The ever growing population would touch more than 3 billions in few years. So to feed such an immense population, agriculture industry need to embrace IoT. The demand for more food has to address challenges that include excessive climate conditions, weather change and different environmental affects that results from farming practices.

The destiny of Indian agriculture must be worked with understanding and excessive cease technologies that can expand production and furthermore regains the attention of farmers in this industry. So these smart farming techniques would assist farmers to lessen scrap and enhance capacity.

OBJECTIVES

1. To update farmers with the new technology and to avoid manual labour.
2. To reduce wastage of water and enhance productivity of crops by providing them ideal condition.
3. To meet the difficulties such as severe weather conditions and advancing climate change, and environmental consequences resulting from intensive farming practices.
4. Design a model and connect it to the android app and cloud server.

LITERATURE SURVEY

1. S.Sivachandran, K.Balakrishnan, K.Navin, "Real Time Embedded Based Soil Analyser", International Research Journal of Engineering and Technology (IRJET). Volume: 3 Issue 3 | March2014

In this paper, authors propose an embedded soil analyser with

measures the pH value of the soil and based on this value gives measure of various soil nutrients. The system proposed here uses signal conditioning, display, microcontroller unit, sensors, power supply and thermal printer.

2. Anand Nayyar, Er. Vikram Puri, "IoT Based Smart Sensors Agriculture Stick for Live Temperature and Moisture Monitoring using Arduino, Cloud Computing & Solar Technology" May 2015.

This paper presents an IoT based smart stick that enables live monitoring of the different agricultural parameters. This stick helps farmer acquire live data of temperature, soil moisture.

3. Chandan Kumar Sahu, Pramitee Behera, "A Low Cost Smart Irrigation Control System", IEEE sponsored 2nd International Conference on Electronics and Communication System (ICECS2015)

In this paper, the author proposes a model where the flow and direction of water is supervised and controlled. This is done with the help of DHTT11 and soil moisture sensor. This method also proposes a way to select the direction of water and this information is also sent to the phone and gmail account of the farmer.

METHODOLOGY

The basic building blocks of an IoT System are Sensors, Processors and applications. So the block diagram below is the proposed model of our project which shows the interconnection of these blocks. The sensors are interfaced with Microcontroller, data from the sensor is displayed on the mobile app of the user. Mobile app provides an access to the continuous data from sensors and accordingly helps farmer to take action to fulfil the requirements of the soil.
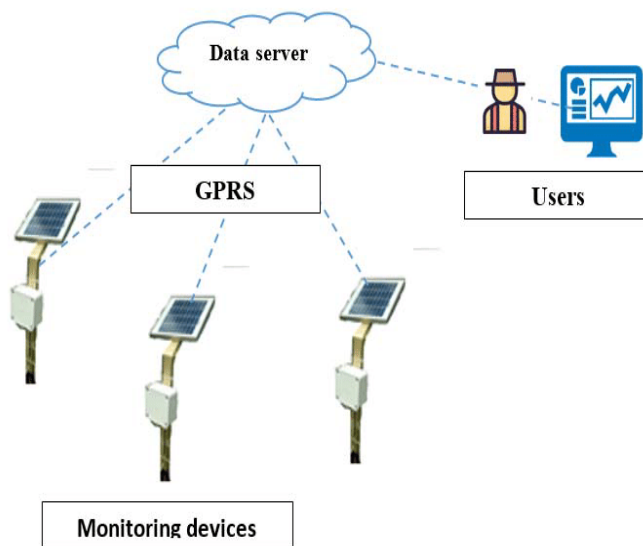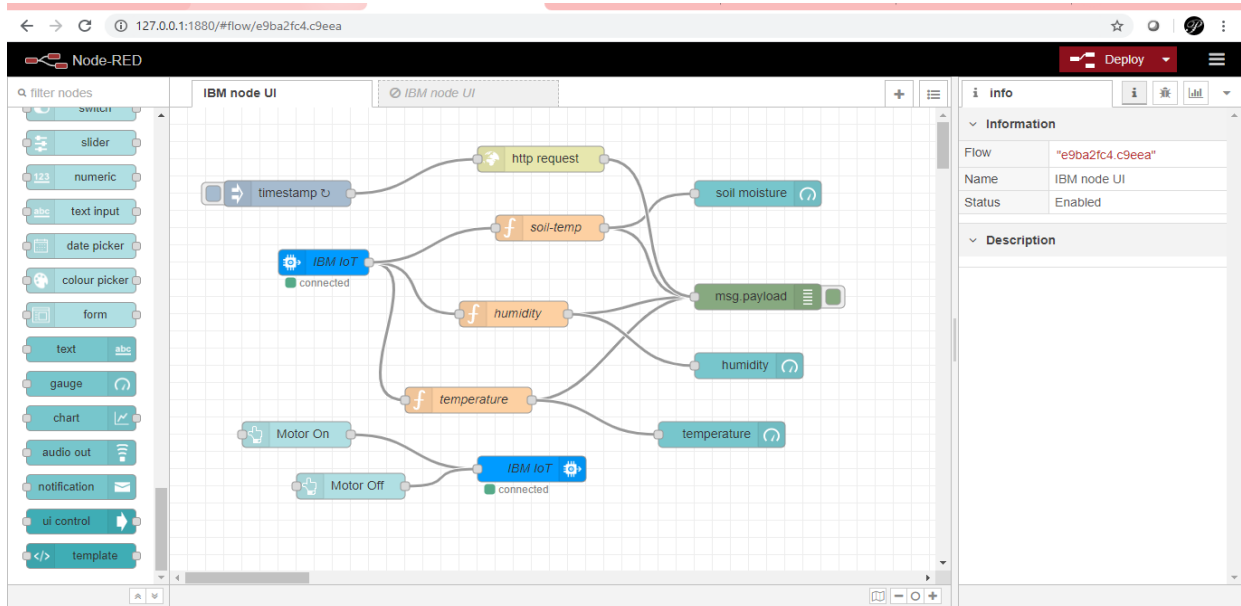
FLOW CHART

When the data of different sensors that are humidity, temperature, soil moisture and location is acquired it is sent to the mobile app of the user and if the water content in the soil is less than the cut off value then an alert message is received on the app of the user and motor gets switched on automatically using relay.
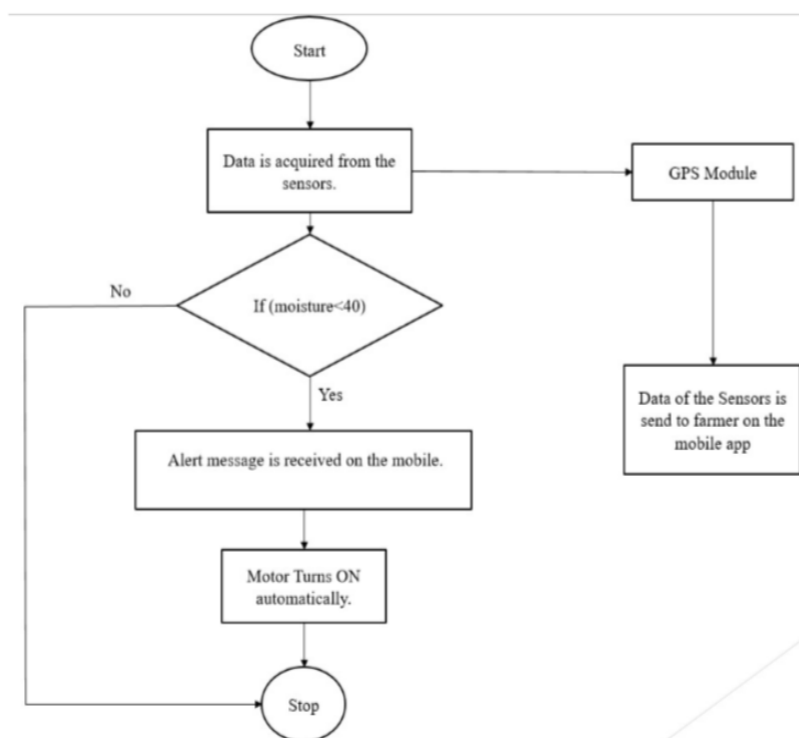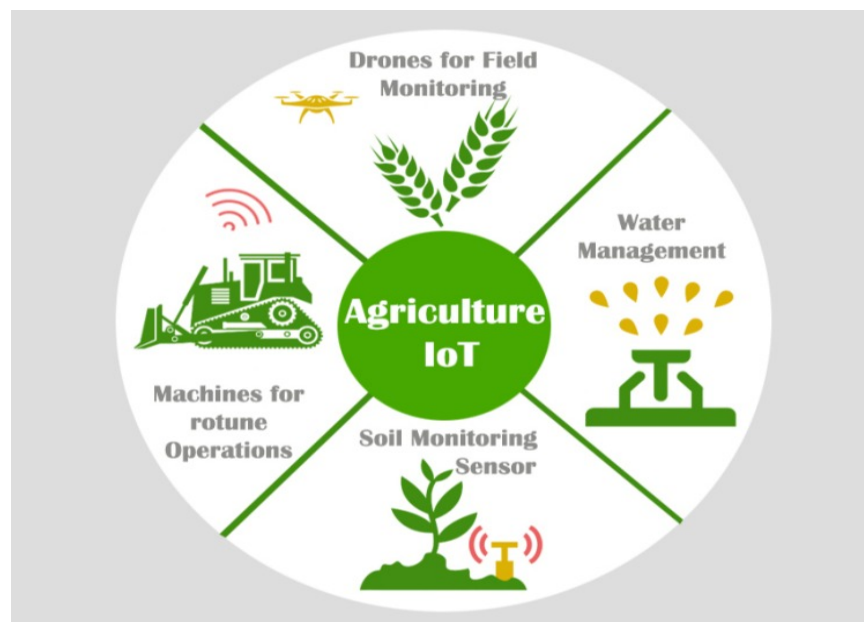
NODE-RED

APPLICATIONS OF IoT IN AGRICULTURE

Precision farming
Agricultural drones
Livestock monitoring

Advantages of IoT

1. Utilization of Resources Efficiently
2. Minimization of Human Efforts
3. Time-saving
4. Increase Data Collection

Disadvantages of IoT

1. Security
2. Privacy
3. Complexity

CONCLUSION

The proposed model explores the use of IoT (Internet of things) in the agriculture sector. This model aims at increasing the crop yield by helping in predicting better crop sequence for a particular soil. Thingspeak helps in real time sampling of the soil and hence the data acquired can be further used for analysing the crop. We have also taken many readings of the soil moisture, temperature and humidity of the environment for various days at different times of the day. Data on the cloud also helps the agriculturists in improving the yield, evaluating the manures, illness in the fields. This model focuses on the utilization of IoT in agriculture and the solutions proposed in this paper will improve farming methods, increase productivity and lead to effective use of limited resources.

FUTURE SCOPE

The future scope of this project could be including variety of soil sensors like pH sensor, Rain sensor and then collecting and storing the data on cloud server. This would make the predicting and analysing processes more accurate. It also includes making different data mining algorithms suitable for data analysis in agriculture.

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[10]http://osoyoo.com/2017/08/arduino-lesson-1-channel-relay-module/

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[12]https://github.com/sarful/nodemcu_gps_tracker_blynk_app_in_IOT_platform

[13]https://www.electronicwings.com/nodemcu/dc-motor-interfacing-with-nodemcu

[14] https://docs.blynk.cc/