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Smart Agriculture

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Abstract— Internet of Things (IoT) technology has brought revolution to each and every field of make a self-configuring network. The development of Intelligent Smart Farming IoT based devices is day by day turning the face of agriculture production by not only enhancing it but also making it cost-effective and reducing wastage. The aim / objective of this paper is to propose a Novel Smart IoT based Agriculture Stick assisting farmers in getting Live Data (Temperature, Soil Moisture) for efficient environment monitoring which will enable them do smart farming and increase their overall yield and quality of products. The Agriculture stick being proposed via this paper is integrated with Arduino Technology mixed with various sensors and live data feed can be obtained. The product being proposed is tested on Live Agriculture Fields giving high accuracy over 98% in data feeds.

***Keywords* – Agriculture IoT, Agriculture Precision, Arduino Mega 2560, DHT22 Temperature Sensor, Smart Farming, Soil Moisture Sensor,**

1. INTRODUCTION

Today, individuals have access to an array of smart applications like smartphones, laptops, smart televisions, refrigerators, microwave ovens, etc. However, there aren't many smart devices for the bedroom department of the house. One prominent and important feature that exists in the bedroom is a wardrobe or closet. In fact, over 80% of the respondents we surveyed agreed to have access to a wardrobe. Smart wardrobe helps users manage their clothes inside their wardrobe. Besides having an attached screen to show the status of each cloth, it can also push all data into a cloud and further sync up data with a mobile application. User can get suggestions on what to wear today from their phone app based on the events in their calendar and the weather.

India is a country where majority of our population are dependable on the agriculture to live their daily life. In this modern technological era poor farmers of india cannot get enough assistance from others to help them with technology and make their work easier. This project made automatic field monitoring & controlling system that can be utilize to improve the condition of green houses. Arduino Uno microcontroller is the main controlling unit of whole unit

our goal is to put together a set of technologies into a system that could be used to aid the farmers to locate the defect in their farms

PROPOSED SYSTEM

To design a microcontroller (IoT) based Smart Agriculture that will detect the soil moisture and tempreture and thereby, will help farmers to locate the problem in their fields easily.

A. BACKGROUND

The demand for smart technologies such as Big Data, cloud-based services, GPS, and the IoT is gaining pace in the agriculture industry. Driven by the rising need for high precision crop analysis, automated farming techniques, and collection of data from the field, the world is likely to witness the agriculture industry get smarter with the implementation of aforementioned technologies in the coming years. Data thus derived from implementing smart technologies can help farmers yield high quality and larger quantity of crops.

The rapid escalation of food demand due to the growing population worldwide is boosting the demand for smart agriculture. The smart agriculture engages advanced technologies such as Big Data, GPS, IoT and connected devices. Smart agriculture helps in automated farming, collection of data from the field and then analyses it so that the farmer can make accurate decision in order to grow high quality crop. The field data are collected with the help of sensors, cameras, micro controllers, and actuators. Then the collected data are transferred via internet to the operator or the farmer for decision making.

B. IMPORTANCE

To survive in the highly competitive and rapidly changing agriculture market of the twenty-first century, a farmer's passion for working on the land and hard work is no longer enough. Innovative farming technologies require more and more professional skills.A modern farmer should be an expert in agricultural regulations, data analysis, accounting, budgeting and now in technology too.The good news is that as more new farming technologies emerge, they get more affordable. There are many free apps for farmers who are new to tech. What's more, most of the smart farming products offer exhaustive educational material since thoughtful tech providers adapt their products to the needs and capabilities of farmers.

C. OBJECTIVES AND SCOPE OF THE PROJECT:

Soil Moisture and Temperature detecting machine

The main objective of this project was to design a greenhouse monitoring system that is be highly reliable and is useful for harvesting crops. Our project mainly focuses on the control of parameters such as-temperature, methane quantity, soil moisture Can fit perfectly in every house and in daily life of people

1. Supply water according to moisture level of soil.
2. Automatic alarming system to avoid the burning of plants by excessive temperature of atmosphere
3. Reusing process of excessive water in the field..

D. FEATURES OF THE PROJECT

The Project consists of the following features:

1. Simple drive circuit: The connections and the circuit design of this system is simple hence it is much more convenient to develop.

2. Time saving: the project helps us to save time by doing all the search work with the help DHT22 Tempreture and Moisture sensor.

3. Hassle-free: no mess and untidiness to find the problem in the field which was In the case of traditional method of farming.

3. DESIGN

PHASES OF PROJECT

Phase 1: Planning, Analysis, Designing and Implementation.

Analysis: Getting clear idea of the project title and doing research on it we will get our definition and after that then we will first create the Literature Survey of the project and do the whole documentation.

Planning: After analysis we will first study about it and do some research on it for our better understanding of the project and also get a rough picture about what would be our problem definition for the particular project.

Designing: Then we will construct the design of the project and according to that, will list down all the requirements needed for the construction for the prototype of our project.

Implementation: After acquiring the requirements we first developed the connections of the hardware components (Arduino, LEDs etc) and then added the coding part later with help of Arduino data cable to the Arduino.

Phase 2: Testing and Deployment

Testing: After the prototype is ready we will first connect the hardware with the assigned code and then we will check if it supports the mechanism or not. If not we will solve the issues regarding to it and will check again. Deployment: After, complete integration and testing of project real time running and operation of the system will be done. User need to check the value.*Subject Learning Outcomes and Contents*

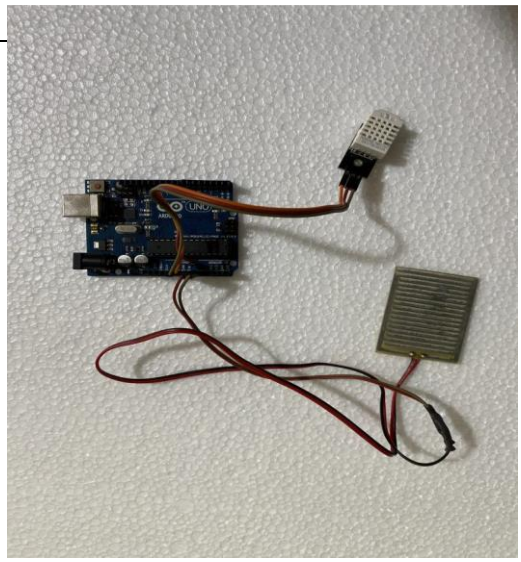
4. ANALYSIS AND PLANNING

A. Feasibility Study

Getting clear idea of the project title and doing research on it we will get our definition and after that then we will first create the Literature Survey of the project and do the whole documentation. After analysis we will first study about it and do some research on it for our better understanding of the project and also getting a rough picture about what would be our problem definition for the particular project.

Technical Feasibility: Here one has to test, whether the proposed system can be developed using existing technology or not. It is evident that the necessary hardware and software are available for development and implementation of the proposed system. Hence, the solution is technically feasible.

Economic Feasibility: As part of this, the costs and benefits associated with the proposed system compared and the project is economically feasible only if tangible or intangible benefits outweigh costs. The system development costs will be significant. So the proposed system is economically feasible.



B. Cost estimation:

Components	Cost
Arduino uno, jumpers, resistors, led,bread board	Rs. 720
DHT22 Temperature and Moisture sensor	Rs. 250
Total	Rs. 970

C. Project planning (Resources,Tools used, etc.)

Hardware Tools:

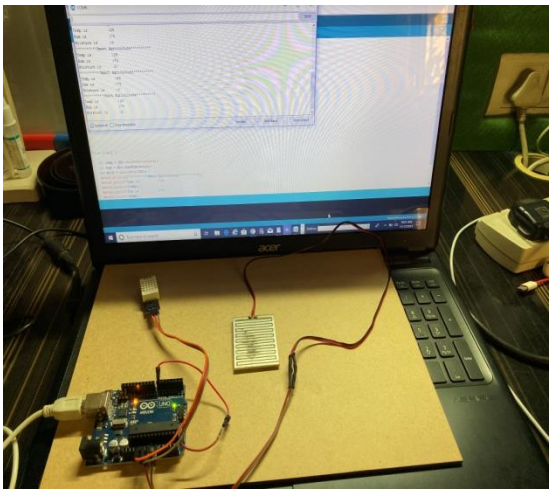
Hardware Components

1. Arduino Uno
2. Breadboard
3. DHT22
4. Connecting wires

D. Software Tools:

1. Arduino uno

E Result(Expected Ourtcome):



5. CONCLUSION

IoT-Based temperature and humidity detecting system provide an efficient and definitive system for monitoring agricultural parameters. The corrective action can be taken. IoT-Based monitoring of field not only allows user to reduce the human work and time, but it also permits user to analyze accurate changes in the atmosphere and for taking possible action. It is cheaper in cost and consumes less power. The GDP per capita in agro sector can be increased. This IoT-based system can be extended for controlling different electronic and electrical apparatus from remote locations and the system can also extended for soil moisture and cattle monitor.

6. Acknowledgement

We would like to thank subject lecturers (current and previous), education designers and other staff member from the Thakur College of Engineering and Technology who previously designed, developed and taught this subject at various times. The success and final outcome of this project required a lot of guidance and assistance from many people and we am extremely privileged to have completed the project successfully. We would like to thank everyone for their guidance.

6. REFERENCES

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