“Implementation of Agriculture Monitoring System Using Raspberry pi and Crop Prediction Using Machine Learning Algorithm”

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Problem Statement

The Internet of Things(IOT) refers to the growing of connected objects that are able to collect and exchange data in real time using sensors. The devices and machines are connected to each other and to Internet and performs specific tasks based on the information given to the devices. As we know that, most of the Indian people have agriculture as their occupation. Farmers will have the ethos of growing or planting the crops, with the help of fertilizers. A 5years ago Machine learning is used in different industries, research. So we got an idea to use Machine Learning(ML) in agriculture field to help the farmers. In olden days’ farmers used the manual method of yielding the crop, testing the soil pH value, and based on some assumptions they predict about the climate conditions. Farmers can get the field details easily through these sensors with accurate values.

Background

As we have referred the IEEE papers and published papers by that overview, we got some clarity of the real time project related to this.

Dataset and Features / Project Requirements

a) Dataset: It has 6columns such as State/Country name Crop year, Crop name, Humidity, Temperature, Soil Moisture, pH.

b) Project Requirements :

Hardware - Raspberry Pi 3 B+ Model, DHT 11 Sensor (Humidity, Temperature), Soil Moisture sensor, Relay, pH sensor, bread board, 5V battery, Power supply.

Software - Raspbian OS, thing speak, Visual Studio Code, Anaconda Python, Tkinter.

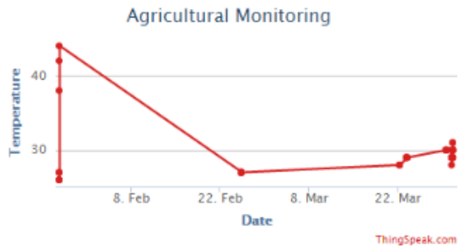
Design Approach / Methods

a) Constraints, Dependencies and assumptions

- It gives the accurate information of the field.
- Human effort will be less in this process.
- With proper information and if the process is done accurate there a possible of getting high profit and productivity may enhance.

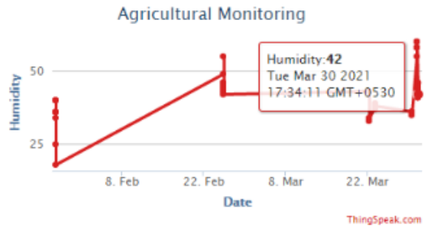
Results and Discussion

a)



b)

c)



Summary of Project Outcome

Initially we thought our output should contain the prediction of crop name based on some field parameters such as Soil moisture, pH, Humidity and Temperature of the surrounding area. This can be achieved in real time process using some years or months dataset. We will be monitoring these parameters day by day to get the proper dataset and those data will be stored in the thing speak (cloud). By using these values and algorithm we can predict what type of crop can be grown.

Conclusions and Future Work

This project can be used for trace grading and this can be improvising this project by adding extra component to the project that is weed detection by taking a particular crop and working on that particular crop. This be one of the future work that can be done.

- We can develop a particular website for the farmers

References

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