

A top-down view of a wooden desk. In the top left is a small potted plant with green grass-like leaves. To its right is a white computer keyboard. In the bottom right is a white cup of dark coffee on a saucer. At the bottom center is a black spiral notebook with a pen resting on it. A large, light purple, rounded rectangular overlay is positioned on the right side of the desk, containing the text 'SMART FARMING'.

SMART FARMING

Teammates(TA Muskan Raina)

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- ♦ Chirag Dhamija (2022101039)
- ♦ Aditya Mishra(2022101047)
- ♦ Namrata Baliga(2022101021)



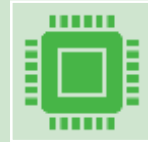
MOTIVATION

- ♦ Smart farming refers to an upcoming concept that combines conventional farms with new technologies such as IoT. The purpose of Smart farms is to increase the quality of agricultural products whilst optimising human intervention.
- ♦ To address the challenges of farmers, efforts and research are in place to improve the quality and quantity of agriculture products by making them 'connected' and 'intelligent' through “smart farming”.
- ♦ The IoT technology uses a data-driven approach and enables farm managers to keep a detailed check on their crops. It helps the farmers take appropriate actions against unwanted pests and protect their crops from various diseases.
- ♦ The smart farming solution keeps an eye on every activity of crop production, which triggers instant alerts about its health, condition, and temperature requirement, and displays all the details on the interconnected smart gadgets.

Implementation of the project



Sensors Record Observational data from the Soil and the Atmosphere to Monitor the Live Weather Conditions and Status of the Plants.



The Sensor Values are Fed to a cloud-hosted IoT platform with predefined decision rules and models. The Data is Simultaneously is updated in the Data base .



Data storage will be done in ThingSpeak, OM2M or any other usual database . Data extracted from them is then used to Power UI and do data analysis.



Data extracted will be fed to UI that will have various features like Data Analysis Portal, Timeline Portal , Preventions Portal , Failure Analysis .

Sensors Required

Capacitive soil moisture sensor – soil humidity

DHT11/22 – temperature and humidity of surroundings

CCS811 – VOC's and CO2

BH1750 – Light intensity

SGP(40)– Alternative for CCS811

Soil pH sensor .

Data Analysis

This will include an interactive filter - enabled dashboard to form graphs and charts about a plant's behaviour under varied conditions to find its optimal habitat or most Favourable Conditions for it's Growth.

Data will be accessed from ThingSpeak REST API's. Data collected over a long enough period of time will be analysed so as to compensate for any abnormalities in sensor reading and error handling.

Various sensors reading will be plotted in graph and then reasonable inferences and analysis will be done .

More about data analysis will be implemented in due course of time.

Timeline



Week 1:- Collecting information about the project and the sensors to be used.



Week 2:-All team members will start working on hardware.



Week 3-Division of tasks among the teammates. i.e. in two sub group one will continue with hardware and other will start the software part of project.



Week 4:- Will try to complete hardware part by now and also basic codes of each of the sensors.



Week 5:-Integrating the respective codes into one and sending sensor data on Platforms .



Week 6:- Finish remaining UI part and setting up tasks for doing data analysis



Week 7:-Giving final touches to the project



Week 8:- Buffer Week

Summary

- Precision farming, or precision agriculture, is an umbrella concept for IoT-based approaches that make farming more controlled and accurate. In simple words, plants get precisely the treatment they need, determined by machines with superhuman accuracy. The biggest difference from classical approach is that each plant gets "special treatment" from these machines . By precisely measuring variations within a field, farmers can boost the effectiveness of pesticides and fertilizers, or use them selectively.
- Our Project also holds the capability to intelligently monitor the climate, eliminating the need for manual intervention. Various sensors are deployed to measure the environmental parameters according to the specific requirements of the crop. That data is stored in a cloud- based platform for further processing and control with minimal manual intervention.

