



DIGI FARMING

by

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(1st Year)

MOTIVATION

- Farmers aren't able to produce high yield of crops . The main reasons being over irrigation and under irrigation. Thus less yield at the end of the farming season,leads to shortage of money for their livelihood increasing their burden
- Over 12,000 suicides were reported in the agricultural sector since 2013, accounting for 9.4% of total suicide victims in the country. All this due to failure of crops.

DESCRIPTION

- A smart farming device called "DIGI FARMING" which is based on AI
- This device helps the farmers predicts the growth condition of the crops, (if its in a proper growing state or not) and also determines the water content required by the crop required in the upcoming weeks

DEMAND

Who is the client?

- Farmers who are looking to improve their yield.
- People who are interested in research based on plants and their growing conditions.

Why is there a need of this product?

- Over irrigation or under irrigation causes undesirable side effects such as Increase in Salinity, Problem of Water logging, etc. These can be avoided by irrigating with the required amount of water and our product helps you in doing that.

What is the importance of this device to the clients?

- Better irrigation of the crops and the ability to monitor crops closely gives us daily updates on the crops growth and can help to maximize the yield of the that harvest which increase the profit of the farmer.

DESIGN

- The idea is implemented through the website and local sensors and AI
- The website has a simple interface for easy usage

TECHNICAL CHALLENGES

- Getting the data set was challenging because there are not many institutes which maintain the required set of data
- Getting proper internet connection is quite difficult in rural areas, so we have to keep most of the processing locally (i.e all the data is processed in the local arduino and only the essential data is sent to the cloud)

VALUES

- The model is versatile that is our model can be trained to grow variety of crops
- Helps in reducing ground water depletion.
- Helps save money wasted on excess resources and thereby increasing profit.
- Monitors growth of the crop on a regular basis. Monitors growth of the crop on a regular basis.
- There is an increase in crop yield.
- Alerts farmers in case of emergencies (heavy rain
- temperature, etc).

TECHNICAL VALUES

- DIGI farming is a highly innovative product which will revolutionize farming.
- Providing a very powerful tool for the farmers to get better results and expand their work.

BUSINESS VALUES

- We are going to sell this product to Small scale farmers at first and work closely with them to get feedback.
- Then we are going to aim for farms with smart system to integrate and make them fully autonomous.

FEASIBILITY

- AI is becoming one of the most important tool to tackle real world problems. And farming is one of the most important part of a society so we are integrating AI with faming to help framers .
- The hardware requirements for this project are pretty basic and there is a decent market for this device.
- We think this is a big opportunity to help our farmer and we are hoping to have a big impact on the future of farming.
- With this project we can expect to modernize the farms in India.

HOW DOES IT WORK?

The device will measure the temperature, humidity and soil moisture near the farm land. The measured data is then sent to the server where it is processed and predicts the water content required by the land to reach optimal soil moisture for optimal growth of crop. The device also considers the approaching of clouds which may rain anytime and increase the soil moisture and hence decreasing the water content required at that point of time. Thus the device will ensure that approaching of clouds does not lead to over-irrigation of crops by reducing water content.

A machine learning based model will be present on the server side which will be trained to increase the growth and yield of tomatoes. Whenever a new data is received by the server it will predict the outputs and reflect the outcomes on a website. All these raw data and predicted data can be easily accessed by farmers using the website. Farmers can see the condition of their crop anytime they want.

HARDWARE AND SOFTWARE REQUIREMENTS

- Hardware
 - Node MCU
 - Soil Moisture sensor
 - DHT11 (temp and RH)
- Software
 - AI
 - Jupyter notebook
 - Arduino IDE

**THANK YOU
ANY QUESTIONS ?**