Ideation Phase

Empathize & Discover

Date	09 September 2022
Team ID	PNT2022TMID05121
Project Name	Iot Based Smart Crop Protection System for Agriculture
Maximum Mark	4 Marks

Introduction:

Nowadays technology has been increasing every day in our life. That IoT is also achieving great things in society. The Internet Of Things (IoT) is useful to formers to monitor the field and secure the field from wild animals. Our project is to help the farmers to keep their fields secure and continuous monitoring from anywhere. One of the major sectors in which IoT has brought major change was the agriculture sector which could be termed as smart Farming or Precision Agriculture. This involves monitoring various parameters which enhances the growth of the plant these factors include:

- Soil Moisture.
- Water Level Indicator.
- Rainfall.
- Temperature.
- Humidity.

By the above-mentioned factors, we could precisely monitor the crop field.

Survey Performed:

Reference 1	Title	Automation and Protection of Agriculture land using IoT
	Authors	Vaishnavi S Electronic and Communication Engineering Department GSSS Institute of Engineering and Technology for Women Mysuru, India
		Poorvika V M Electronic and Communication Engineering Department GSSS Institute of Engineering and Technology for Women Mysuru, India

Inference From Reference 1:

IoT Enabling Technologies described here are:

1. ARDUINO MEGA:

It is an open source IOT development board whose firmware runs on the ESP8266 Wi-Fi module. It performs the operations such as the collection of data from the DHT 11 sensors and if temperature is greater than the threshold then it supplies the water through irrigation. Then if the water level is high the excess of the water is removed through the water pump. If the object is detected through the PIR sensor the needle is rotated and buzzers are switched on.

2. PIR SENSOR:

PIR sensors allow you to sense motion, almost always used to detect whether a human has moved in or out of the sensors range. They are small, inexpensive, low-power, easy to use and don't wear out. Sensitivity range is up to 20 feet (6 meters) 110° x 70° detection range. If the object is detected then is sends information to the Arduino Mega.

3. NEEDLE ROTATOR:

The rotator is used to avoid the animals entering to the field, the nails are been fixed to the to the fence and this is connected to the driver when the animals is passing near the fencing the PIR sensor detects and it sends the information then this needle rotates 90 degree and protects the field.

4. WATER MOTOR PUMP:

The motor is used to pump the excess of water in the field. The pump incorporates an automatic pressure demand switch such that the pump will commence when a tap is opened and turn off when the tap is closed. Alternatively, the pump can be connected to an open hose and a suitable12v switch used to turn the flow On/Off.

Reference 2	Title	IOT in Agricultural Crop Protection and Power Generation
	Authors	Mrs. Sowmya M S Asst. Prof., Department of Electronics and Instrumentation Engineering, JSS Academy of Technical Education Bangalore, India

Inference From Reference 2:

The basic idea beyond using IOT in agriculture is to protect the crops during different seasons. As the many techniques are applied in agricultural sector greenhouse technique is also one of them. As of controlling and monitoring of greenhouse using IOT and some other technologies are implemented. By observing all the technologies which are carried

out on the greenhouse, so we are designing a greenhouse system which can control the parameters in the greenhouse

The propose system is designed by incorporating various hardware and software technologies in to it. The proposed system uses ARM7 LPC2148 microcontroller as a main control unit and all the controlling operations and executions have been carried out by this microcontroller. This system uses multiple sensors to monitor and control various parameters like temperature, moisture content in the soil, humidity etc. The sensors include humidity sensor, IR sensor, moisture sensor and rain sensor/rain switch as shown in the Fig. This sensor provides various readings that will help monitor and control the greenhouse. Entire system works in both automatic mode as well as in manual mode. By using IOT technology proposed system also enables the manual monitoring of green house from anywhere. Power is generated as part of this system using solar panels placed on the roof top of the greenhouse.

Block diagram of the proposed system