

IoT Based Smart Crop Protection System for Agriculture

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PAPER 1

IIoT based smart crop protection and irrigation system

AUTHOR: Ipseeta Nanda, Chadalavada Sahithi, Medepalli Swath, Suman Maloji, Vinod Kumar Shukla

IIOT technologies are used in agriculture fields to help farmers identify various problems and provide solutions. This project aims at providing crop field monitoring and attack against animals. Since the traditional methods like manual monitoring which require sufficient amount of labors and electric fencing depends on type and size of the field. It consists of various sensors and controllers in which it uses wireless sensor network (WSN) and ARM Cortex-A board that consumes 700mA or 3W of power.

The various sensors like DHT 11 Humidity & Temperature sensor, Passive Infrared sensor (PIR), Light dependent Resistor sensor (LDR), HC-SR04 Ultrasonic sensor and cameras for capturing images of the animals that enter the field, which can be used for further processing to Obtain the results.

The process begins with the PIR sensor, as soon as it detects any motion within the range of 10 meters, it automates the camera to capture the image and starts dealing out the image for processing, these images are stored in cloud, simultaneously a message will be generated automatically using SIM900A module to notify the intrusion, along with humidity and temperature. The processed information generates a buzzer sound , all the final results are shared to the farmer's mobile to take necessary actions.

PAPER 2

IoT-Based Smart Crop Field Monitoring and Protection System from Heavy Rainfall Utilizing Raspberry Pi

AUTHOR: G.Dhanalakshmi, M.Anil & P.Madhavi

The paper induces the idea of resolving the problem using microcontroller components i.e., raspberry pi, and a sensor element which includes downpour sensor, soil dampness sensor, pressure sensor, temperature sensor. Each sensor senses the parameter which it specializes and reverts back the result to the system.

The sound, the moisture and the temperature is stored according to the specific plants, if the level of the parameters results in abnormalities the siphon which commences the water supply, automatically stops the waterflow pipe to a particular plant. The raspberry pi architecture and the IoT is connected to a private cloud for the purpose of data storage.

The downpour sensor is a sensor designed to measure the amount of downpour and transfer the collected information to the dc engine in the system. It also shields and protects the crop field from the aftermath of the downpour/heavy rainfall and alerts the people around the crop field with the caution of the downpour.

Even Though the paper provides the quality based solution, the quantity of the components is quite high which increases the probability of failure in any circumstances. The caution provided by the system will be advantageous as it prevents the damages created by the torrential rain and also protects the surrounding humans.

PAPER 3

Smart Crop Protection System from Animals and Fire using Arduino

AUTHOR: N.Srikanth, Aishwarya, Kavitha.H.M, Rashmi Reddy.K, Soumya.D.B

The paper gives an idea to resolve the problem which is caused by the animals. To resolve this an intruder is developed for producing alerts to the farm, to avoid losses due to animals and fire. These intruder alerts protect the crop from damage that indirectly increases yield of the crop. The developed system will not be harmful and injurious to animals as well as human beings.

The hardware used are Arduino Uno Microcontroller ATmega328P, smoke sensor(mq-2), PIR, buzzer, dc motor, gsm module, lcd. A smoke sensor is a device that senses smoke, typically as an indicator of fire. PIR sensors allow you to sense motion, almost always used to detect whether a human has moved in or out of the sensors range. A Buzzer is a noise maker when smoke sensors sense the smoke. GSM for alarming the farmer in case of fire or animal intruder and lcd to display this as an alert message in the system.

This project carries a great social relevance as it aims to address this problem. This project will help farmers in protecting their orchards and fields and save them from significant financial losses and will save them from the unproductive efforts that they endure for the protection their fields. But the disadvantages is the Smoke sensor is very sensitive, which can lead to false alarms as a product of cooking not as responsive to smoldering fires - they are minutes slower than photoelectric sensors in detecting smoke particles from smoldering fires interference and also the fire in agricultural land.

PAPER 4

Smart Crop Protection System from Wild Animals Using IoT

AUTHOR: Priyanka Deotale, Prasad Lokulwar

Crops in the farms are many times devastated by the wild as well as domestic animals and low productivity of crops is one of the reasons for this. It is not possible to stay 24 hours in the farm to sentinel the crops. So to surmount this issue an automated perspicacious crop aegis system is proposed utilizing Internet of Things (IOT).

The system consists of esp8266 (nodeMCU), soil moisture sensor, dihydrogen monoxide sensor, GPRS and GSM module, servo motor, dihydrogen monoxide pump, etc. to obtain the required output. NodeMCU is an open source development board. It allows you to program the ESP8266 WiFi module with the simple and powerful LUA programming language or Arduino IDE. The main advantage is the embedded wireless technology that is web friendly with no use of shields or any peripherals, as is required for Arduinos. The price and size are the USP of the module with the added advantage of good speed and processing power.

As soon as any kineticism is detected the system will engender an alarm to be taken and the lights will glow up implemented at every corner of the farm. This will not harm any animal and the crops will stay forfended. This system not only protects the crops from animals , it also performs different sensing functions. Soil moisture sensors measure or estimate the amount of water in the soil. Dihydrogen monoxide simply represents water. The Dihydrogen monoxide sensor is used to detect the amount of water present in the soil, based upon which dihydrogen monoxide pump will automatically pump the water to the crops.