Literature survey on the selected project and Information gathering

Topic:

IoT Based Smart Crop Protection System for Agriculture

Introduction:

Agriculture is the primary source of livelihood for about 58% of India's population. Agriculture is an important sector of Indian economy and it contributes about 17% to the GDP.

Agriculture also provides employment to 60% of population. But due to various climatic changes and animal intervention the farmers are facing major losses. There are many traditional methods that are being used by the farmers like scarecrows, electric fences, etc,

In some areas farmers uses smoke to prevent their farmland, the burn elephant dung or other materials that create heavy smoke. In some areas people also uses fish or garlic natural emulsion, castor oil to repels the animals.

But these are not very effective to save the farms from animals. Hence, we have designed this affordable system to surveillance and to protect the farm effectively.

Literature survey:

P. Rekha et al, [1] Proposed a system for preventing agricultural land from animal and automated irrigation system. By using arduino, GSM module, IR sensor and soil moisture sensor, senses the environmental data and send to arduino. This system makes the use of IR sensor for detection of animals and soil moisture sensor to find the moisture of soil and automatically control the water pump for auto irrigation system. But this system does not utilize advanced technologies for alerting the farmer and detection of animals in farm

Tejas Khare et al, [2] Proposed automated crop field surveillance using computer vision. In this system the long range camera are placed at the corner of field or land with considering maximum field of view of camera. When animal is detected by the camera the distance between camera and speaker is calculated. The speaker nearest to the animal is identified. The object detection is carried out by pre-trained model YOLO V3 and COCO dataset. If animal is detected the speaker nearest to the animal makes sound. But this system doesn't work in different circumstances like in the night or dark (shadow).

Damini kalra et al, [3] proposed a system for crop protection from insects, pests, locusts, small animals and automatic irrigation system by sensing moisture, humidity and temperature of soil. The crop protection is done on the basis of sound technology and movement detection using ultrasonic sensor. The main advantage of this system is this system works in different circumstances like in night and dark (shadow)

M Jaya Prabha et al, [4] proposed a smart crop protection system from animals using Arduino UNO. The system is consisting of IR sensor for animal detection, ultrasonic sensor which rotates 360 degrees for detection of birds and a GSM module to send alert message to the farmer. It is a very simple system and cannot differentiate between human and animals

Stefano Giordano et al, [5] this paper's motive is to design IOT based system to prevent animal intrusion in the crop field and providing weather conditions. Every year in Italy animal intrusion causes huge loss. The current systems for prevention of animal intrusion are cruel and large amount of installation and maintenance cost is required. This system is based on an ultrasounds generator, which is not harmful for anyone in any way. Repelling system consists of a low power state-of-the-art Cortex ARM M0+ microprocessor which handles frequency production and the networking operations. Passive Infrared Sensor (PIR) sensor generates signal only when an animal is detected. Device can be tuned according to the animal that is desired to be repelled. Open source operating system called RIOT is used as it has features such as multi-threading, efficient network stack and memory allocation which are compatible for Real-Time use. One thread is used for the detection using a PIR and transmitting a multicast message to the gateway and the nodes. Another thread is used for receiving multicast messages from other nodes. Since our devices are producing data in real time, a Time-Series Database ' OpenTSDB' is selected and a column family database 'HBase' as a long period storage. Weather monitoring system includes the device and the back-end. The device is a solar powered ESP-8266 Ardunio based board connected to various sensors. it communicates over Wi-Fi to the back-end system. It provides a real-time weather conditions via email notification. Main goal is to provide repelling and monitoring system.

Mr. P. Venkateswara Rao et al, [6] The purpose of this system is to build a system to detect movement of animal and produce sound. Camera and microcontroller are used to detect the animal. System consists of Arduino, camera, GSM and buzzer. Movement detected by camera module after detection of movement system produce sound to divert animals and by GSM model SMS is generated by the system to alert the owner. This system provides an early warning about possible intrusion and damage by animal. This system is not harmful for anyone in anyway. A camera is basic requirement for this project. The camera module is set in a location where the animals enter into the farm. Prohibit the entry of the animal and give alert to owner of the farm.

The main problem of crop vandalization by wild animal tried to solve in this project. This system provides urgent attention and effective solution. System designed a smart embedded farmland protection which is low cost and also consumes less energy. Such system will be helpful to the farmer in protecting their field and save them from significant losses. This system help in achieving better crop yields thus leading to their economic well being.