Ideation Phase

Literature survey

Team ID	PNT2022TMID44430
Project Name	IOT BASED SMART CROP PROTECTION SYSTEM FOR AGRICULTURE .

IIOT BASED SMART CROP PROTECTION SYSTEM

AUTHORS : Ipseeta Nanda,Sahithi Chadalavada,Medepalli Swathi, Lizina Khatua

YEAR :2020

ABSTRACT:

A centralizing method in the area of IIoT (Industrial Internet of Things) contrived for understanding agriculture which is preceding the arrangements low-power devices. This is yields a monitoring procedure for farm safety against animal attacks and climate change conditions. IIoT advances are frequently used in smart farming to emphasize the standard of agriculture. It contains types of sensors, controllers.The result will be generated on a catalog of the mobile of the person to take the necessary action .

INTRODUCTION:

IIoT (Industrial Internet of Things) tendencies are often utilized in smart farming to boost the standard of agriculture. But our productivity remains enormously diminutive as associated to world standards . Societies after pastoral areas drift to a municipal extent for her lucrative commerce besides they can't deliberate on crofting.Cultivators are experiencing numerous challenges for attaining more production due to unexpected encounters of animals, slight sorts of species, beetles, some hazardous snakes and weather circumstances. Within the existing system, electrical protection is used to give up untamed animal assaults on vegetation which leads to the death of animals.This ensures the complete safety of crops from animals also as from the weather conditions thus prevent the farmers .

WORKING PRINCIPLE :

As quickly as the PIR devices goes turned ON, on sensing theaction inside vary of 14m, then the digital photographic camera will grow to become ON which foremost apprehensions a photograph later it begins to process the image, which will be saved on board as nicely as cloud, concurrently a message shall be produced robotically to the recorded cellular quantity makinguse of a SIM900A unit to notify regarding the invasion collectively through small print of inversion andmoisture offered through dht11 device. If we categorize it as an interference attributable to smaller animalsbe keen on wild rabbits or pig and as a consequence of flip ON the DC motor . In server-side data is checked and then harmonized with idyllic values from the sensors and offers the values of temperature, humidity value, and soil moisture value.

CONCLUSION:

Agriculture irrigation control stays unique of the determined significant interests in agriculture . The simulation result describes the aqua utilization according to the field parameters in the cultivation field.we proposed an integrative way to deal with brilliant horticulture at modern level, zeroed in on low-power crusades and arising causes . This field of this effort remains towards withdraw to monitorthe system for crop security conflicting to subconscious occurrences and meteorological conditions .

SMART CROP PROTECTION SYSTEM FROM ANIMALS

AUTHORS : Mr. Jayesh Redij, Mr. Pranav Shitap, Mr. Shikhar Singh, Mr. Durvesh Zagade, Dr. Sharada Chougule.

YEAR : 2020

ABSTRACT :

Animals like wild boars, buffaloes, cows, elephant, monkeys, birds, etc. damages the crop a lot which results in loss of production and so of farmer. It is very difficult for a farmer to keep an eye on the field every time. This system is designed to surveillance the field 24*7 which is not possible for a human being and diverts the animals without harming them. The system uses raspberry pi, PIR sensor to detect animal, camera module to look on animal, GSM module to send alert message to farmer, and a buzzer to divert the animals. This system ensures the safety of farm and decreases the loss of farmers.

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.

WORKING PRINCIPLE :

In this we have used raspberry pi which is main heart of the system. We have used PIR sensor for motion detection. After processing if motion is detected, camera will be automatically turned on and command will be sent to capture the image. Captured image will be processed with the help of OpenCV to check if the motion was due to animal interference or human interference. If it is due to animal interference, sound will be produced by buzzer to scare away that animal, and an alert email containing that image will be sent to the farmer. Flashlight will be used during the night time to capture better image and to simulate the presence of human during the night time.

CONCLUSION:

In India many times farmers face huge loss just because of animals. Hence, to overcome this issue, the designed system produces the sound to scare the animals, so that animals will automatically ran away. The main aim is to preventthe loss of crops and to protect the area from intruders and wild animals which poses a major threat to the agriculture areas. The designed system won't be harmful to animals and persons and it protects the farm areas.

Design, Development and Evaluation of an Intelligent Animal Repelling System for CropProtection Based on Embedded Edge-AI

AUTHOR:

Mike O. Ojo (mikeoluwatayo.ojo@unito.it)

YEAR: 2020

ABSTRACT :

In recent years, edge computing has become an essential technology for real-time application development by moving processing and storage capabilities close to end devices, thereby reducing latency, improving response time and ensuring secure data exchange. Taking into account the constraints coming from the rural environment in terms of energy supply and network connectivity, the proposed system is based on IoT platforms that provide a satisfactory compromise between performance, cost and energy consumption.

INTRODUCTION :

In the Agriculture 4.0 era, cutting-edge technologies such as the Internet of Things (IoT), Big Data, Blockchain, Edge/Cloud computing, and Artificial Intelligence (AI) are increasingly used to enable innovative applications that have the potential to revolutionize our daily lives.Agriculture automation has been on the rise leveraging, among others, Deep Neural Networks (DNN) and IoT for the development and deployment of many controlling, monitoring and tracking applications at a fine grained level . This helps to provide accurate and efficient solutions to support agricultural activ- ities compared to the traditional methods, which are per- formed manually, with processes that are time consuming, tedious, increase production costs, and are prone to errors.

WORKING PRICIPLE:

The device uses a solar panel and LiPo batteries charged with theuse of Maximum Power Point Tracker (MPPT). Frequencies can be tuned according to the animal to repel.For the implementation of the animal recognition model, and to improve real-time performance, different edge computing devices have been considered: RPi 3B with or without Intel Movidius NCS and NVIDIA Jetson Nano.Concerning animal recognition, YOLOv3 and Tiny- YOLOv3 have been evaluated and adopted as detectors for their ability to work in real-time at high performance as well as to adapt, after training their neural network models, to different edge computing platforms, such as RPi (with or without NCS) and Jetson Nano.

CONCLUSION:

In this paper, we introduced a new application to defend crops from ungulate attacks that takes advantage of the latest technological developments in different ICT areas, such as AI, Edge Computing, IoT and LPWAN. The implementation of the application required the design and development of a complex system for intelligent animal repulsion, which inte- grates newly developed HW and SW components and allows to recognize the presence and species of ungulates in real time and also to avoid crop damages caused by the ungulates .

REVIEW PAPER ON SMART CROP PROTECTION SYSTEM

AUTHOR :

Krunal Mahajan, Riya Parate, Ekta Zade, Shubham Khante, Shishir Bagal .

YEAR : 2021.

ABSTRACT :

We have a lot of technology that can protect the farm 24x7 those systems and technique we are discussing in this paper. We have different types of technology that can help to secure the farm. We have seen Arduino and raspberry pi based Farm protection system. But those Systems have different mythology and platform for that and the cost of those projects also increased so that those are not affordable with the farmer. Our main aim to design a system that can help to farmer to protect his farm from, animals with getting harm to them.

INTRODUCTION :

Different strategies point just at observation which is fundamentally for human gatecrashers, however we will in general fail to remember that the fundamental foes of such farmer are the animals which literate the harvests. The issue of natural life assault on crops i.e., crop Canalization is getting extremely normal in the conditions of Tamil Nadu, Himachal Pradesh, Punjab, Haryana,Kerala and numerous different states. This issue is articulated to the point that occasionally the farmer choose to leave the territories barrendue to such incessant animal attacks.This framework causes us to fend off such wild animals from the farm lands and it is additionally an mechanized relying upon the need so that there is no manual work, subsequently saving time and likewise forestalling the deficiency of harvests.

WORKING PRINCIPLE :

This project is helpful for the farmer to protect his farm from animals and unknown person near to his farm. We are use PIR sensors for sensing the movement at the boarder of farm and that data will be given to Arduino after processing it can be display on lcd display. But we it is not sufficient to protect the farm hence we can add dog sounds via speaker so that the animals are not come inside the faram.We are interface nodemcu for message of alert.We have added new feature to protect our farm by another issue. When the fire on our farm then we have received a fire message. So this is very protective and costly project. Various Researches have been undergone to enhance crop cultivation and are widely used. So as to enhance the crop productivity efficiently, it is necessary to monitor the environmental conditions in and around the field.

CONCLUSION :

From this literature survey we have seen lots of technology that help to farmer for to protect his farm. Specially IOT based system who can monitor the farm online. In above research papers they are not looking cost of System and so that didn't get affordable to every farmer. Hence we want implement a costless smart crop protection system.

Smart Crop Protection System

AUTHOR :

Mohit Korche , Sarthak Tokse , Shubham Shirbhate , Vaibhav Thakre , S. P. Jolhe5

YEAR : 2021

ABSTRACT :

Agriculture is the backbone of the economy but because of animal interference in agricultural lands, there will be huge loss of crops. This article provides a comprehensive review of various methods adopted by farmers to protect their crops. The article also discusses use of modern technology in agriculture. Finally, this article reviews smart crop protection system using sensors, microcontroller and gsm module.

INTRODUCTION :

Crops in farms are many times ravaged by local animals like buffaloes, cows, goats, birds etc. This leads to huge losses for the farmer. Due to over population, it occurs a deforestation this results in shortage of food, water and shelter in forest areas. So, animal's interference in residential areas is increasing day by day which affects human life and property causes human animal conflict but as per nature's rule every living creature on this earth has important role in eco-system. Elephants and other animals coming in to contact with humans, impact negatively in various means such as by depredation of crops, damaging grain stores, water supplies, houses and other assets, injuring and death of humans. These systems use a motion sensor to detect wild animal signal the microcontroller to take action.

WORKING PRINCIPLE :

Lead to poor yield of crops and significant financial loss to the owners of the farmland. This problem is so pronounced that sometimes the farmers decide to leave the areas barren due to such frequent animal attacks Another major problem faced by Indian farmer is their dependency on nature and poorly maintained irrigation system. Current agricultural practice are neither economically nor environmentally sustainable and India's yields for many agricultural commodities are low. Poorly maintained irrigation system and almost universal lack of good extension service are among the factor responsible. Poor roads to market from village, rudimentary market infrastructure, and excessive regulation are few of the other concerned points for the agriculture sector in India.

CONCLUSION:

The problem of crop vandalization by wild animals and fire has become a major social problem in current time. It requires urgent attention as no effective solution exists till date for this problem. Thus, 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.

ADVANTAGES :

- Lowered operation costs .
- Increased quality of production .
- Reduced environmental footprint .
- Remote monitoring .
- Accurate farm and field evalution .

DISADVANTAGES :

- Poor internet connectivity in farms .
- High hardware cost .
- Disrupted connectivity to the cloud .