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IOT BASED CROP PROTECTION – Literature Survey

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1. **<u>IoT Based Automated Crop Protection System</u>**

Authors: N S Gogul Dev; K S Sreenesh; P K Binu

Published Date: July, 2019.

Project Description:

- Low productivity of crops is one of the main problems faced by the farmers in our country.
- Crops are destroyed by wild animals and bad weather conditions, which are detected using PIR sensors and cameras where animals are identified using TensorFlow image processing techniques.
- Using Internet of Things (IoT), the farmers are able to maximize their production.
- Raspberry PI is used as the processing unit of the system, along with the help of sound buzzers.

Gaps:

- Ultrasound frequencies of each and every pest is hard to determine accurately, thereby having to give in the range of over 6000 kHz.
- ReLU can be implemented for a faster training of the dataset.

2. **IOT Based Crop Protection System against Birds and Wild Animal Attacks**

Authors: P.Navaneetha; R.Ramiya Devi; S.Vennila; P.Manikandan; Dr.S.Saravanan

Published Date : April, 2020.

Project description:

- Animal detection system designed to detect the presence of animals and offer a warning.
- An animal detection system is designed to detect the movements of animals if they're found nearby.
- PIR and ultrasonic sensors detect the movement of the animal and send a signal to the controller.
- It diverts the animal by producing sound and signal further, this signal is transmitted to GSM which gives an alert to farmers and forest department immediately.

Gaps:

- Detecting the movement of different animals and producing the sound to drive them away is necessary.
- Young and old animals should be taken into consideration.
- The safety of the animals is vital, as is the protection of the crops.

3. **IOT Based Crop Protection System**

Authors: S. Karthika; Kalyana Rangan V; Aditya K; Anand Anil Kumar; D. Selvakumar

Published Date: July, 2021.

Project description:

- The effect of insects in farmland has been very high in some parts of the world.
- Widespread adoption of chemical pesticides has resulted in unprecedented crop yields.
- The agriculture pest monitoring device is a moving bot or a line following bot, which monitors the amount of pest in farmland.
- The image captured using the camera module is processed, and ReLU is used for faster training of the dataset.

Gaps:

- This can be treated only as a pest control system.
- Damage done to the crops by wild animals cannot be controlled using this system, which could also be implemented using the same.
- ReLU is non-differentiable at zero and is unbounded, leading to the creation of dead neurons which may never be activated.

4. **Analysis of Crop Protection Techniques Involving IoT**

Authors: Prakriti Bhardwaj, Ranjan Verma, Parul Kalra & Deepti Mehrotra
Published Date : June, 2021.

Project description:

- The protection of crops is very important for the improved quality of agricultural production.
- Yield and crop production can be escalated by implementing optimum methods.
- Proper and accurate information about the plant/crop and soil while growing can make the crop healthy and also prevent serious harm.
- Prevention of serious harm that may occur in the future, by using pesticides and other prevention techniques is implemented.
- The rapid advancement of science and technology, especially using sensors and IoT equipment will be a bon for the society and environment.

Gaps:

- The methodology used should be updated every now and then, keeping in mind the advancement of technology.
- The model could focus on a particular technique to bring out the best possible result.

5. Automatic Irrigation and Crop Protection System Based on IoT

Authors: M. Raja, N. M. Nithish, , B. Saravana Shankar & D.Sadhurwanth

Published Date: August, 2022.

Project description:

- Proposal of an automatic irrigation, and it maintains the moisture content present in the soil by automatic irrigation system.
- Monitoring soil properties such as temperature, humidity, soil moisture, and motor status.
- The crop protection system is used to control the outbreak of the animals that enter the field.
- Capacitive soil moisture sensor v1.2, and DHT11 sensor is used to measure the exact amount of soil moisture, humidity, temperature, motor status.
- An alarm voice system is used to run the animals detected using motion detection sensor controlled by Node MCU.

Gaps:

- The model primarily focuses on the irrigation system and driving wild animals away.
- While it could also focus on the prevention of attacks done by pests.
- Finding a proper balance with irrigation and crop protection is necessary.