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# Farm Field Protection System

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## Abstract:

All man-made hazards for the destruction and shortening of the land's surface make the lives live in the forest to make an entry into the farm field also outside the forest to reside in need of hunger and thirst. As they enter into the field where do human resides there is great exploitation for both animals and humans. As farming is the backbone of India so we are in need to save crops, farmers, and cultivable lands too. The entry of wild animals especially elephants to the farm field may destroy crops and yields zero percent of income to the farmers. There is another factor that the elephant might also kill the humans once the animal feels insecure. Till then many of the farmers and village peoples who reside nearest coverage of the forest are in trouble and were killed. Though not every man are wise they even take revenge on the animals and kill them heartlessly by inserting some exploitable products into their feeding materials such as fruits etc.. so to avoid these losses here emerges the deep learning methodology and IoT-internet of things to save all without the human's attention work and it is completely automated.

**Keywords:** Deep learning, IoT, image processing, decoy/lure sound, Raspberry Pi, micro controller ,wifi module, Sound sensor, distance detector.

## I Introduction

There are huge factors for the farmers to make a good yield and the factors such as flood, rain, storm, thunder ,etc,... might destroy the crops. Apart from all these natural calamities, the farmland is destroyed by the entry of animals into the field especially the invasion of elephants. This is one of the greatest catastrophic to both humans animals also for agricultural products. As the animals are in search of food they enter where human resides and causes the above factors, in turn, human conflict his/her retribution towards the animals. To avoid these cataclysmic activities the image processing technique is used to detect the animals pictorially and with the help of artificial

intelligence, the pattern is drawn and recognized intellectually. Also with the help of the IoT-internet of things sensor, we can even detect the sound produced by the elephants as it instincts and delivers the information to the people who resides nearer place a warning is mad by an alarm with the voice of a decoy which is unpleasant to elephants also the information about the movement of such an extinct animal is found and can be directed to the forestry department. Then they take care of such a valuable animal and can be saved from the endangered species.

## **II Deep learning**

Deep learning is a technique of making the machine conceptually learn things. Image processing is one of the important ways for detecting what we need to follow up using the patterns. Artificial intelligence senses and makes it automated. With the help of deep learning the animal(i.e elephant) is picturized and detected when it is far distance. Here the artificial intelligence can detect, classify, and acknowledges it. Nowadays due to lots of technologies that are running in and around the world are used more smartly to even unlock the door, mobile,laptops, and much more,..all these can happen only with the help of artificial intelligence. An approximation is that machine is about 98.87% of accuracy while compared with human intelligence. For example, let's take social media platforms it might be anything Instagram, Twitter, hike,etc,..On Instagram, we might have an option as suggested friends how do all these things do go eve thought of that? All these suggested friends and showing the posts or images that you might like is always shown repeatedly the same in youtube, google, etc,..is due to image classification and neural networks all these pieces of information about what you are interested and watching of are collected by the image classification and distributed through neural networks.

## **III INTERNET OF THINGS(IoT)**

Internet of Things is used to collect, store, monitor, and retrieve the data by connecting with many devices and fetches the information with the help of integrated sensors and many more components. As the IoT is wireless and can be connected through a WIFI module or any wireless technology which makes them easy to use for all people and so it connects anything from anywhere you are.

## **IV Procedure**

The image of an animal is first taught to the machine using deep learning and then the image is processed by the patterns in which machines understand through the patterns and prints and acknowledges using AI artificial intelligence. Once it receives the acknowledgment an alarm consists of a decoy sound in which it is unpleasant to elephant makes elephants scare and move away from that place also the sound alerts the people who habitat in the area nearer to. When the alarm rings the sound impulse is sent through the sensor. As it is connected. Then the microcontroller is connected to the

ADC pin in the Raspberry Pi in which converts the analog signals into digital signals. The converted digital signals are sent as data and can be viewed using any HDMI to view. The data consists of what type of animal it is and also shows the calculated distance where the animal is exactly located. With the help of IoT GECKO which is an open-source platform for IoT devices to connect. Then using a wifi module that is connected to the wifi send the information prior(500-1000meters or a certain distance far from the cultivable land)to the forestry department to get to know and safeguard elephant, crops, and lets of human lives from a great catastrophe.

## **V Sensors**

Sensors are used to collect the information by detecting and sends the information as an electrical pulse which is later converted into a digital signal. Here sound detecting sensors and distance elicitation sensors take place.

### **\*Sound detecting sensor:**

The sound produced by the alarm consists of decoy or lure s sound is sensed.

### **\*Distance elicitation sensor:**

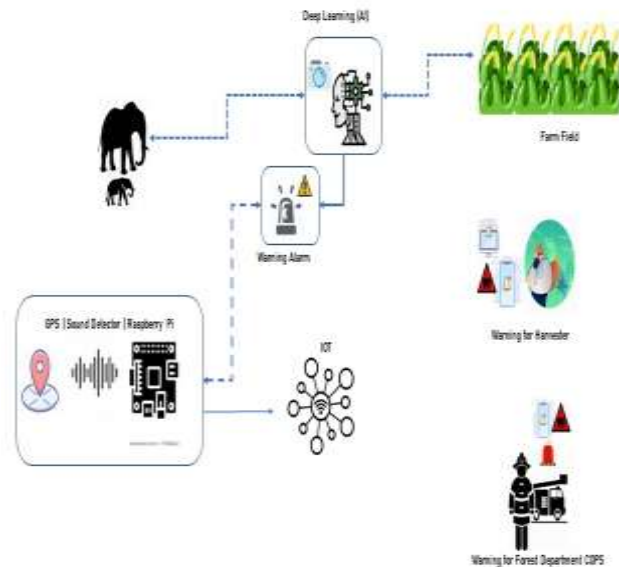
The distance of the animal that is present is easily calculated by measuring the sound's frequency. That is they are indirectly proportional to each other if the alarm sound is high then the distance is very low and if the warning is low we can assume that it is somehow far. So, that is the purpose of using a distance calculator.

## **VI Raspberry Pi**

The Raspberry Pi is the cheapest small-sized computer that can be connected to any HDMI sources for view, and speakers, keyboard, mouse are also used.

## **VII Profit for Government and Farmers**

By considering the above implementation of deep learning near the farm field makes the farmers save crops, reduced work for the Government in safeguarding the people who reside nearby forest coverage from a huge annihilation. Also, the endangered species can be saved and increases the quality of India in the Conservation of biodiversity and fauna well being. As it is low cost can be implemented anywhere.



## VIII Result

With the help of the internet of things, deep learning[ai], and sensors the fetched information is collected and sent to the forestry department and the warning alerts the people to be secure.

## IX Advantages

- \*Elephant is considered to be one of the endangered species and so can be prevented from the extinct.
- \*Catastrophe of human and crop exploitation can be prevented.
- \*The farmers can get their 100 percent yield.
- \*Harming animals can be stopped.
- \*Information for the forest department is sent prior to which the officers reach before any loss of life takes place.
- \*Zero percent life loss, money loss, etc...
- \*Since the cost of setup is low we can implement every farm field.
- \*The implementation does not harm in any way physically and mentally to both animals(i.e.elephant) and for humans.
- \*Also if any human harms the elephant for the cost of valuable products such as fur, tasks, tail hair, feet nails, etc..they are directly caught by the forest department cop.
- \*Zero disadvantage is detected.
- \*Poaching of elephants is stopped.

\*As they are monitored continuously no animal is more poached for the valuable products produced by them.

\*Hunting of other animals such as Male gorilla in Rwanda and Zaire it is hunted for its body parts, head, and hands. Bengal tigers are sold for \$1000000 in the foreign market. An elephant is hunted for ivory and its feet are used for making ashtrays. Bushmeat is poached for the source of protein-rich in the west and central Africa and many more wild animals are hunted for commercial purposes which is punishable according to the Indian act is also established.

\*More shrinkage of forest further can be prevented.

\*Poachers are punished.

## **X Conclusion**

The exploitation of vast hectares of yields and uncountable deaths of animals like elephants can be saved as they are extinct and endangered. A large number of humans are being killed by the elephants due to their violent activities. To avoid all these crucial activities some of the steps must be taken to save crops, animals, humans, and for peace.

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