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ANIMAL DETECTION IN FARMS USING OPENCV

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ABSTRACT:

Although husbandry is the most significant sector of the Indian frugality, crop damage from wild creatures has lately come a significant social issue. numerous growers have reckoned on guards therefore far to cover their crops, which raises overhead costs. But the rate of crop failure has mainly increased as a result of the current climate. The quantum of debt in the agrarian assiduity has soared. In these circumstances, a planter can not anticipate farther crop desolation and can not go to raise husbandry costs

Keywords: Computer vision, Open CV, Deep learning, Animals.

I. INTRODUCTION:

The population's salutary requirements are met by husbandry, which also provides a variety of raw accoutrements for other businesses. Beast hindrance in agrarian areas results in a significant loss of crops. Wild beast raiding damage to crops has grown significantly in significance lately. multitudinous creatures, including wild boars, macaques, porcupines, deer, monkeys, and bears, can be veritably destructive and sometimes indeed affect in mortal casualties. Due to the tight wildlife rules, small growers may potentially lose up to 50 of their crop to creatures and are unfit to take any drastic way. mammoths are a veritably conflict-prone wildlife species, especially in India, hence mortal- giant conflict is on the rise. Accordingly, a system to identify any irruption that can help the farmers to drive down these creatures as soon as they learn about their intrusion.

Many industries, including the medical sector, robotics, remote sensing, machine vision, and content-based image retrieval, can benefit from computer vision. Numerous issues across many areas are solved using computer vision. In the sphere of security, computer vision is also used for automatic surveillance, access control, and attendance tracking. A tree's disease can be detected by looking at its leaves, blossoms, or fruits, and agricultural goods can also be monitored for quality using computer vision. ays like disease detection of a tree by examining leaves or flowers or fruits and quality control of agricultural products.

II.LITERATURE SURVEY:

[1]. Computer Vision is applied in agriculture field for food grading, disease identification of the plants and agro-farms security. Huge crop damage is caused by the wild animal attacks on the agriculture farms. Here are some traditional techniques followed by the local farmers, but which are not effective. This problem can be solved using computer vision techniques. In this paper, we proposed an algorithm to detect animals in a given image. WCoHOG is a Histogram oriented gradients based feature vector with better accuracy. It is an extension of Co-occurrence Histograms of Oriented Gradients (CoHOG). In this paper LIBLINEAR classifier is used in order to get better accuracy for high dimensional data. The experiments were conducted on two benchmark

datasets called Wild-Anim and CamaraTrap dataset. Experimental results prove that W-CoHOG performs better than existing state of the art methods..

[2]. Agriculture is still one of the most crucial sectors of the Indian economy. It is important for human survival as well as economic growth. Traditional systems like humanoid scarecrows are used even today in an agricultural field to stop birds and animals from disturbing and feeding on growing crops. There are many loopholes in such ideas and so enhancing agricultural security has become a major issue these days. Thus, this paper focuses on proposing a system which detects the intruders, monitors any malicious activity and then reports it to the owner of the system. It acts as an adaptable system which provides a practicable system to the farmers for ensuring complete safety of their farmlands from any attacks or trespassing activities.

[3].We present a class of efficient models called MobileNets for mobile and embedded vision applications. MobileNets are based on a streamlined architecture that uses depthwise separable convolutions to build light weight deep neural networks. We introduce two simple global hyperparameters that efficiently tradeoff between latency and accuracy. These hyper-parameters allow the model builder to choose the right sized model for their application based on the constraints of the problem. We present extensive experiments on resource and accuracy tradeoffs and show strong performance compared to other popular models on ImageNet classification. We then demonstrate the effectiveness of MobileNets across a wide range of applications and use cases including object detection, finegrain classification, face attributes and large scale geo-localization.

3. PROBLEM STATEMENT:

Agriculture plays a huge part in India. Beast intrusion in granges causes huge losses in agrarian profit which a planter can not bear, especially if they've small husbandry areas as maturity of the growers in India. Computer Vision are being decreasingly applied in agrarian field for advanced productivity by automating tasks. We propose an AI grounded system which monitors the field using cameras for any intrusion by the creatures and cautions the planter or can indeed take certain conduct on its own.

4. PROPOSED SYSTEM:

We suggest an artificial intelligence (AI) based surveillance system to identify and track any animal's presence. One or more cameras can be conveniently positioned at potential entry points for animals. The camera footage is processed by the system using OpenCV and computer vision. To find the animals in the farms, a pre-trained model of MobileNet SSD (Single Shot Detector) is employed. The MS COCO picture dataset is used to train the model. When an animal is found, a siren is activated, which the animal may find alarming. It may also alert the farmer, allowing him or her to promptly take the necessary steps.

Advantages of Proposed System:

i. Confidentiality and Integrity
ii. Data sharing
iii. Accessible to only authorized users
iv. Data encrypted

SYSTEM ARCHITECTURE:

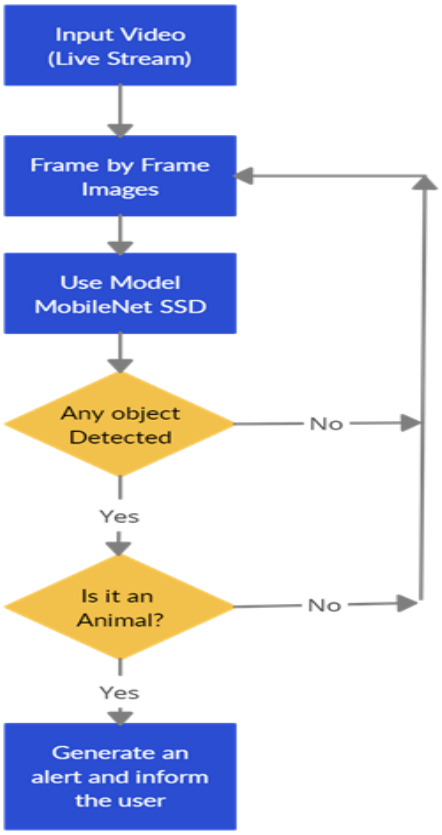

Fig 1. System Architecture

4.1ALGORITHM USED:

• SSD (Single Shot Detector) is a popular algorithm in object detection.

• It's generally faster than RCNN.

• SSD has two components: a backbone model and SSD head. Backbone model usually is a pre-trained image classification network as a feature extractor.

• Here, we will use MobileNet SSD model to detect the objects.

• Here, VGG Net is used as a backbone model to extract the features from the images.

• Convolution layers (CNN) are then used for object detection in the images using the feature map generated by VGG net layer.

• The model is able to detect multiple objects in any given image.

• For the purpose of classification, the model uses softmax in the last layer.

• Softmax takes in a vector of numbers and converts them to probabilities which are then used for image generating results.

• Softmax converts logits into probabilities by taking the exponents from every output and then normalize each of these numbers by the sum of such exponents, such that the entire output vector adds up to one .

6.1 PROJECT DESCRIPTION:

FEASIBILITY STUDY:

In this stage, the project's viability is assessed, and a business proposal is presented with a very basic project plan and some cost projections. The proposed system's practicality must be investigated during system analysis. This will guarantee that the suggested solution won't burden the business. Understanding the main system requirements is crucial for the feasibility analysis.

Three key considerations involved in the feasibility analysis are:

- Economical Feasibility
- Technical Feasibility
- Social Feasibility

ECONOMICAL FEASIBILITY:

This study is being conducted to see how profitable the system will be for the association. The corporation has a finite amount of money to invest in the dissemination and growth of the system. The costs must be supported by evidence. As a result, both the sophisticated system and the budget were met, and this was made possible by the fact that the majority of the technologies were freely accessible. It was only necessary to purchase the customised goods.

TECHNICAL FEASIBILITY:

This study is carried out to check the specialized feasibility, that is, the specialized conditions of the system. Any system developed mustn't have a high demand on the specialized coffers. This will lead to high demands on the available specialized coffers. This will lead to high demands being placed on the customer. The advanced system must have a modest demand, as only minimum or null charges are needed for enforcing this system.

SOCIAL FEASIBILITY:

The goal of the study is to determine how much the user accepts the system. This includes the instruction needed for the user to operate the system effectively. The user must accept the system as necessary rather than feeling frightened by it. The techniques used to inform and acquaint the user with the system are the only factors that affect the user's level of acceptance. He needs to have more self-assurance so that he can offer constructive feedback, which is encouraged because he will be the system's ultimate user.

V.RESULTS:

The result of the proposed system is represented in fig 2 to fig 6.

WORLD ANIMALS;

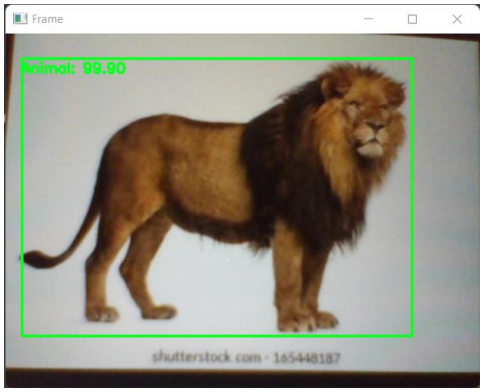

Fig 2 Lion

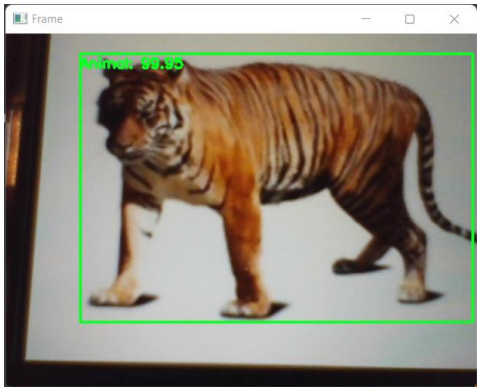

Fig 3 Tiger

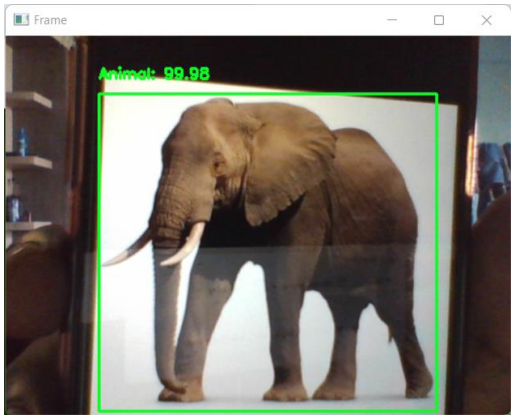

Fig 4 Elephant

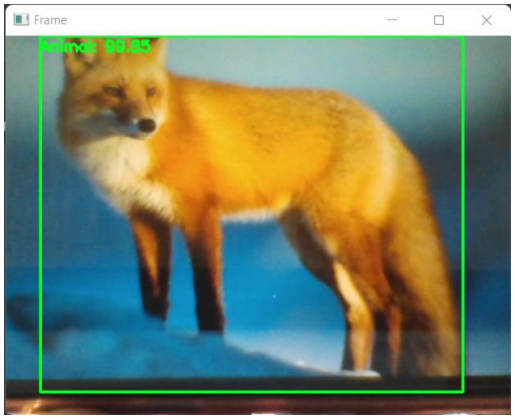

Fig 5 Fox

DOMESTIC ANIMALS:

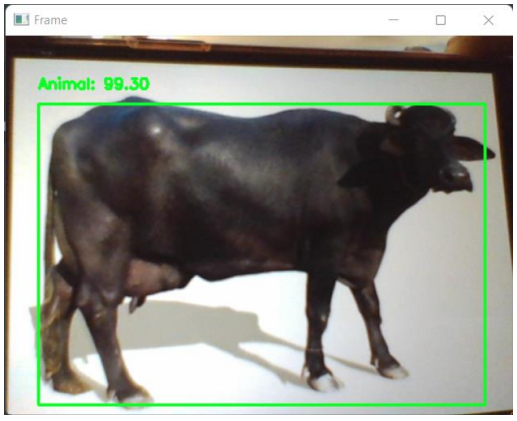

Fig 6 Buffalo

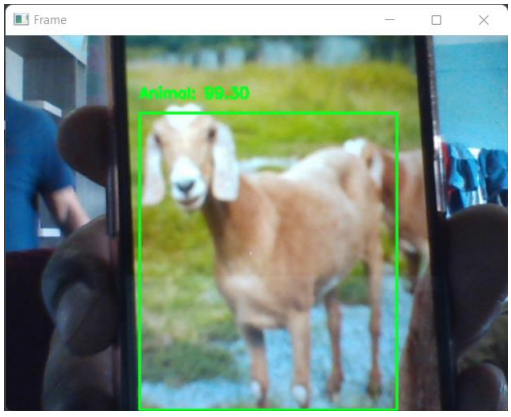

Fig 7 Goat

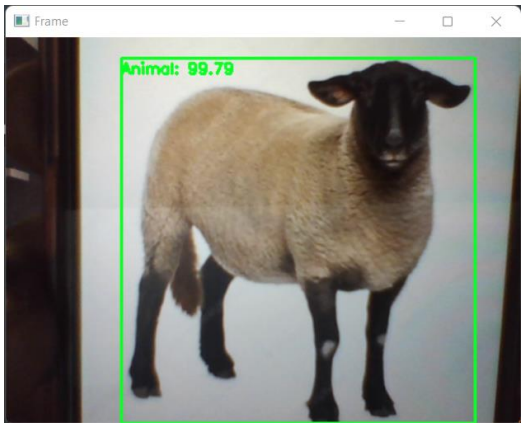

Fig 8 Sheep

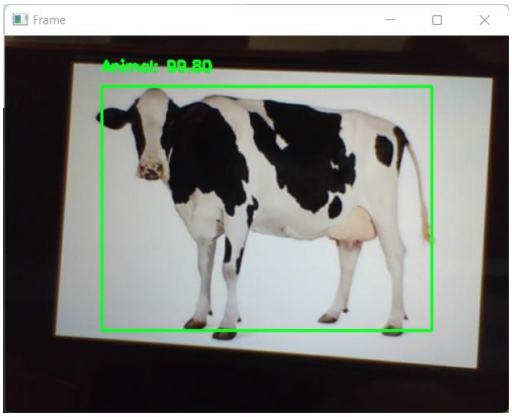

Fig 9 Cow

BIRDS:

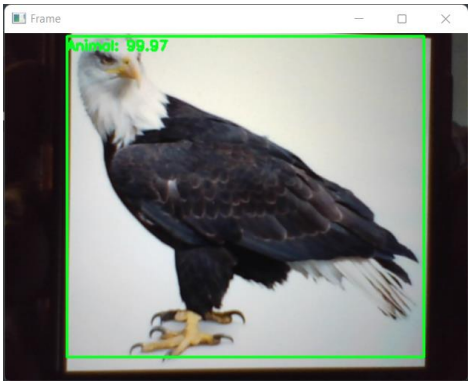

Fig 10 Eagle

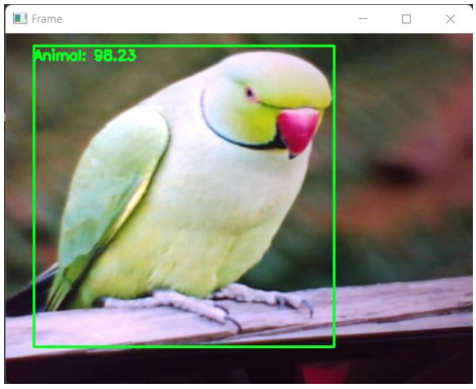

Fig 11 Parrot

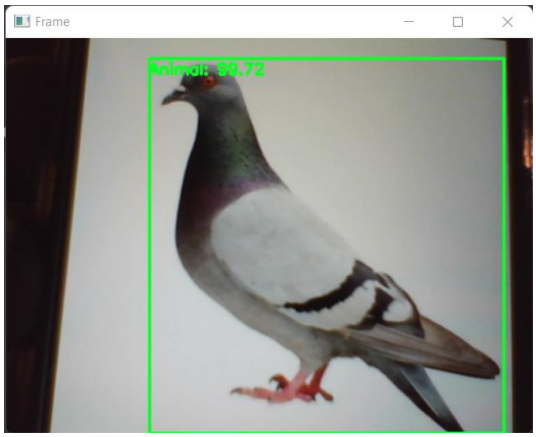

Fig 12 pigeon

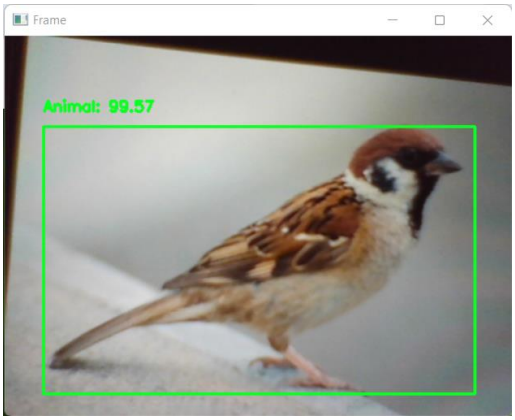

Fig 13 Sparrow

8. CONCLUSION:

In the present, crop damage by wild creatures has grown to be a significant social issue. It needs immediate attention and a workable result. The suggested system enables us to cover footage from any camera device installed in granges to descry any beast presence or intrusion. At 18 frames per second, the object discovery model operated basically continuously.

It's a dependable and affordable system. Both to scarify off interferers and to gesture the planter to take action, the temptress sounds. As a result, the ranch's crops can be defended with this operation. In place of the current traditional ways, it might be veritably helpful for agrarian objects.

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