IMPLEMENTATION OF AGRICULTURE BASED ANIMAL REPELLENT SYSTEM USING DEEP LEARNING

A PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

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ABSTRACT

Crop raiding by animals has become one of the most common human animal disputes as a result of human encroachment of wildlife habitats and deforestation. Wild animals can cause significant damage to agricultural crops and attack farmers working in the field. Farmers suffer huge crop loss due to crop raiding by wild animal like elephants, wild boar and deer. One of the main concerns of today's farmers is protecting crops from wild animals' attacks. There are different traditional approaches to address this problem which can be lethal (e.g., shooting, trapping) and non-lethal (e.g., scarecrow, chemical repellents, organic substances, mesh, or electric fences). Farmers has tried many ways for preventing animals raid from lighting fire crackers to maintain a watch on the field through the night but none of these were effective. Nevertheless, some of the traditional methods have environmental pollution effects on both humans and ungulates, while others are very expensive with high maintenance costs, with limited reliability and limited effectiveness. In this project, we develop a system that combines Computer Vision using DCNN for detecting and recognizing animal species, and specific ultrasound emission (i.e., different foreach species) for repelling them. The edge computing device activates the camera, and then executes its DCNN software to identify the target, and if an animal is detected, it sends back a message to the Animal Repelling Module including the type of ultrasound to be generated according to the category of the animal.

Keywords: Animal Recognition, Repellent, Artificial Intelligence, Edge Computing, Animal Detection, Deep Learning, DCNN.

PROBLEM STATEMENT

On the other hand, sporadic or widespread animal tracks carry a moderate risk, and a no-harvest buffer zone may need to be created around nearby crops. Widespread crop damage is a high risk and indicates significant evidence of contamination. Marking and avoiding harvest around high-risk areas of crop damage is a good strategy to reduce the potential for contamination. Widespread evidence of faucal contamination is very high risk and would justify marking the contaminated area and creating a no-harvest buffer zone around the area where significant faces was found. Existing methods like fencing can be an effective deterrent, but it may not be practical for larger farms; however, small portions of fencing may direct animals around high value or sensitive crops to other areas and electric fences are no longer efficient in solving such conflicts, to protect their crops from getting damaged because of animal intrusions, farmers have been using electric fences around their fields and areas where the fencing don`t prove efficient, farmers prefer to stay up all night and guar their fields from animal intrusions

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LIST OF ABBREVIATION

ABBREVIATION		EXPANSION
CFI	-	Corporate Finance Institute
DFD	-	Data Flow Diagram
SVM	-	Support Vector Machines
DT	-	Decision Tree
SAS	-	Statistical Analysis Software
HBOS	-	Histogram based Outlier Score
CWI	-	Centrum Wiskunde & Informatics
CNN	-	Convolution Neural Network

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