ABSTRACT
Project: Animal Intrusion Detection System

INTRODUTION

The Animal Intrusion Detection System project aims to mitigate the negative consequences of wildlife interactions with humans. The project leverages deep learning algorithms using the YOLOv5 architecture to analyse and predict the animal in visual imagery. This enables the project to alert the necessary authorities and individuals to take appropriate measures to reduce the risk of conflict between humans and animals. To achieve this, the project employs a custom dataset that includes a wide range of animals and their specific characteristics. Through this project, the team seeks to contribute to the sustainable coexistence of humans and wildlife while preserving biodiversity.

OBJECTIVES

- To find the sustainable solution to reduce human animal conflict.
- Mitigating the negative consequences of human-wildlife interactions : The project aims to reduce the risks and negative impacts of conflict between humans and wildlife, such as property damage, injury, or death.
- Promoting the sustainable coexistence of humans and wildlife : The project aims to contribute to a balance between human activities and wildlife conservations, ensuring that both can thrive and coexist.

PROCEDURE

1. Data Collection: Collect images of animals that you want to detect.
2. Data Annotation: Annotate the images by marking the animal's bounding boxes in each image. You can use various annotation tools such as labelImg, RectLabel, makesense.ai or VGG Image Annotator (VIA).
3. Dataset Preparation: Create a dataset in Yolov5 format using the annotated images and annotations.
4. Train the model: Train the Yolov5 model on your dataset. You can use pre-trained weights to speed up the training process.
5. Test the model: Test the trained model on a set of images that are not part of the training dataset to evaluate its performance.
6. Deploy the model: Once the model performs well on test data, you can deploy it on new data, such as images or videos, to detect animals.

ABOUT THE PROJECT

Our project aims at detect wildlife animals, so that we could reduce the risks and negative impacts of conflict between humans and wildlife, such as property damage, injury, or death.Currently we have chosen two animals i.e., elephant and tiger. For this we have collected more than 150 images of this animals and we have bounded each images with respective animal names with help of makesense.ai . All the bounded images are put for training by the yolo(You Only Look Once) classifier.

Yolov5 is an open-source deep learning framework for object detection, including animal detection We have used yolov5s for our object detection project. YOLOv5s is based on a deep convolutional neural network and is capable of detecting and classifying a large number of objects in real-time video or image streams. YOLOv5s is optimized for accuracy and speed, and it is designed to work on a range of devices, including GPUs and CPUs. It achieves high accuracy by using a combination of multi-scale feature extraction, anchor-based object detection, and a powerful classification network. Overall, YOLOv5s is a powerful tool for object detection tasks, particularly in scenarios that require real-time processing. We have obtained persisting mean average precision (mAP) of 0.968 even with poor quality visuals!

CONCLUSION

Hence by this project we have addressed one of the biggest problem faced by our planet currently by ensuring a sustainable method to resolve human animal conflict.