# DETECTION OF ANIMALS AND ALERTING SYSTEM

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## ABSTRACT

This paper presents the recognition of animals on the images with road scenes has received little attention in modern research. There are very few specialized data sets for this task. Popular open data sets contain many images of animals, but the most part of them is not correspond to road scenes that is necessary for on-board vision systems of unmanned vehicles.The paper describes the preparation of such a specialized data set based on Open Images and datasets.

Deep learning approaches to detect these objects. We will train and test modern neural network architectures YOLO algorithms in deep learning. Hardware will be raspberry pi, USB web cam, memory card and buzzer for alerting. The software implementation was done using the deep learning libraries and technology. The paper focus on avoiding collisions and accidents with animals. The camera we are using will capture the pictures or videos of the roads or the way the car is travelling and if an animal is detected then it will alert the driver by buzzing sound.

Our main idea is to avoid accidents and saving animals from road accidents. The proposed data set and neural network approach to recognize animals on images or videos or live feeds have shown their effectiveness and can be used in the on-board vision systems of driverless cars or in driver assistant systems.

Key Words: Image recognition, Detection, Animals, Data set, Deep Learning, Neural Networks, Software, Python.

## I.INTRODUCTION

Over the last few decades, pattern classification has become one of the most important fields of artificial intelligence because it constitutes an essential component in many different real-world applications.Artificial intelligence (AI), sometimes called machine intelligence, is intelligence demonstrated by machines, in contrast to the natural intelligence displayed by humans and other animals.The images are fed as input to the Animals Recognizer to learn and identify the Animals. Here we used YOLO Technique for identifying Animals.

Deep learning is a subset of machine learning. Deep artificial neural networks are a set of algorithms that have set new records in accuracy for many important problems, such as image recognition, sound recognition, etc., In deep learning, a convolutional neural network (CNN) is a class of deep neural networks, most commonly applied to analysing visual imagery.CNNs use relatively little pre-processing compared to other image classification algorithms.

This means that the network learns the filters that in traditional algorithms were hand-engineered. This independence from prior knowledge and human effort in feature design is a major advantage. They have applications in image and video recognition, recommender systems, image classification, medical image analysis, and natural language processing.

## II.LITERATURE REVIEW

1. **Zhang, T., Wiliem, A., Hemsony, G., & Lovell, B.C. (2015)**

   • Recent studies in computer vision have provided new solutions to real-world problems. In this paper,we focus on using computer vision methods to assist in the study of kangaroos in the wild. In order to investigate the feasibility,we built a kangaroo image dataset from collected data from several national parks across the State of Queensland.To achieve reasonable detection accuracy, we exploded a multi-pose approach and proposed a framework based on the state-of-the-art methods on the proposed dataset. Also, the proposed vision tools are able to help our field biologists in studying kangaroo related problems such as population tracking for activity analysis.

2. **Kumar, S., & Singh, S. K. et al. (2016)**

   • Focused primarily on pet animal tracking in Smart City, a significant challenge for authorities. The required level of animal safety and management is not delivered for by classic processes of animal identification and tracking. In this report, it suggested the use of the key animal biometric identifier to track individual animal animals (dogs). The recognition technique was used to match and classify the extracted features of pet animals (dogs) with single-shoot impermissibility and distance metric approaches. A prototype was developed to evaluate the accuracy of the recognition system.

## 3. Rey, Nicolas &Volpi, Michele &Joost, Stéphane&Tuia, Devis. (2017)

   • They have readily been used to count birds, marinemammals and large herbivores in different environments, tasks which are routinely performed through manual counting in large collections of images. In this paper, we propose a semi-automatic system able to detect large mammals in semi-arid Savanna. It relies on an animal-detection system based on machine learning, trained with crowd-sourced annotations provided by volunteers who manually interpreted sub-decimeter resolution colour images.

   • The system achieves a high recall rate and a human operator can then eliminate false detections with limited effort. Our system provides good perspectives for the development of data-driven management practices in wildlife conservation. It shows that the

detection of large mammals in semi-arid Savanna can be approached by processing data provided by standard RGB cameras mounted on affordable fixed wings UAVs.

## III.EXISTING METHODS

**1.**In 2015Zhang, T.,Wiliem, A., Hemsony, G., & Lovell, B.C, focused on using computer vision methods to assist in the study of kangaroos in the wild. The data base is only for kangaroos. we cannot detect and manage other type of animals.

**2.**In 2016 Kumar.S&Singh.S.K,focused on pet animal tracking system. This system didn'tdeliveredthe required level ofanimal safety and management.In this report,biometric identifier technique for tracking individual pet animals.

**3.**In 2017 Rey, Nicolas &Volpi, Michele &Joost, Stéphane&Tuia, Devis,It relies on an animal-detection system based on machine learning, trained with crowd-sourced annotations provided by volunteers who manually interpreted sub-decimeter resolution color images.The system achieves a high recall rate and a human operator can then eliminate false detections with limited effort.

## IV.PROPOSED METHOD

In this we are usingRaspberry pi and camera for surveillance. The camera will continuously monitor the animals. If the animal is found it will search in data base for pre-defined animals list. We used animal data set with numerous entries.We can add new animals or remove animals from data set as we wish.

The system we are using will have enormous amount of data which is trained automatically before by the software. We don't need to train the system again to add a new picture to the data set. This system uses CNN to get trained for the pictures. These pictures are compared to the input pictures that are captured by the web camera. This system can be used for cars and traffic system to prevent accidents. The data sets can be extended to various species even to persons.

If the animal is in list, then it will show the name of the animal. Or if the animal is not found in the data base, then it shows None in the monitor it means animal is not found in the data base we need to add. Buzzer alert will be given when it will find an Animal. The animal detection is done using YOLO.

## V.METHOD OR TECHNIQUE USED

**Software:**

- Python IDLE
- NOOBS installation into raspberry pi

**Hardware:**

- Raspberry pi
- Web cam to observe surroundings
- USB cables
- Batteries for power supply

## VI.RESULT

The simulations are performed in VNC viewer.We used Python IDLE software and deep learning technique to train the images automatically. After running the program,by comparing input image with trained images in the data set and gives buzzer sound.After detecting the animal the captured will be sent to the desired mail with the name of the animal and frames per second(FPS),as shown in figure 1.
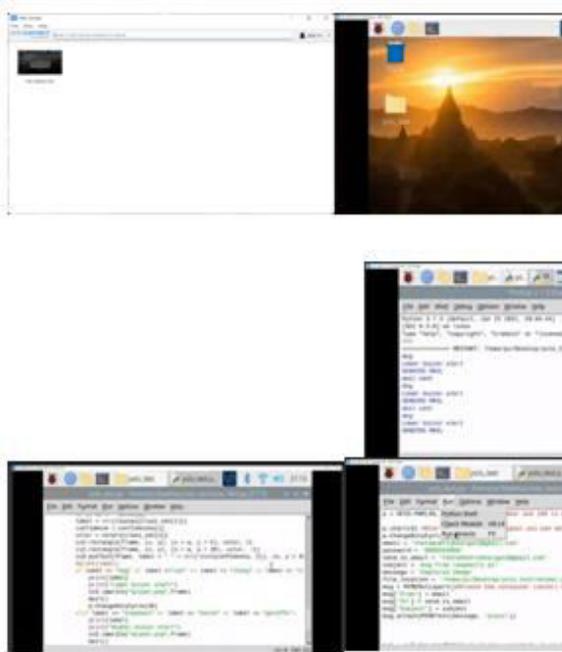
**Fig.1:Process of animal detection**

## VII.CONCLUSION AND FUTURE SCOPE

In recent years, with the increasing importance of animal identification and tracking, animal recognition algorithms have received more and more attention, and the application of images has opened up new and individuals. This project uses this principle to use YOLO for animal identification studies.

With the remarkable potential of neural network, the proposed system can recognize animals of all species. Training datasets obtained from YOLO for the input image is obtained by using the algorithm specified. Animal species recognition system is implemented with the help of YOLO Algorithm.

This work can be further extended by sending an alert in the form of a message when the animal is detected to the nearby forest office. Furthermore it can be used to reduce human wildlife conflict and also animal accidents.

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