Animal Detection Using Deep Learning Algorithm

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Abstract: The automatic classification of animal images is an onerous task due to the challenging image conditions, especially when it comes to animal breeds. Checking of wild animal in their common environment is crucial. This proposed work develops an algorithm to detect the animals in wild life. Since there are many different animals manually identifying them can be a difficult task. This algorithm classifies animals based on their images so we can monitor them more efficiently. Animal detection and classification can help to prevent animal-vehicle accidents, trace animals and prevent theft. This can be achieved by applying effective deep learning algorithms.

Key word: Animal Detection, Deep Learning Algorithm

I. INTRODUCTION

Examining wild animals in their natural environment is an essential task in ecosystem. Due to the enormous growth in human inhabitants and the increase in hunt of economic development makes excessive exploitation of natural resources, fast, innovative and significant changes in the Earth's ecosystems. An expanding region of the land surface has been changed by human activity, modifying natural life populace, habitat and behaviour. More fatally, many wild animals on the Earth have disappeared, and many species are locomoted into new places where they can disturb all natural and human resources. Deep neural networks are the collection of algorithms that have placed new records in precision for several vital problems; Convolutional neural network (CNN) is a type of deep neural networks, most generally applied for investigating visual images. Compared to other image classification algorithms, CNNs employ fairly modest pre-processing. This liberty from past knowledge and human intervention in feature design is a key benefit of Convolutional neural network (CNN). They have several applications in the field of image and video recognition, recommendation systems, image classification and medical image processing.

II.METHODOLOGY
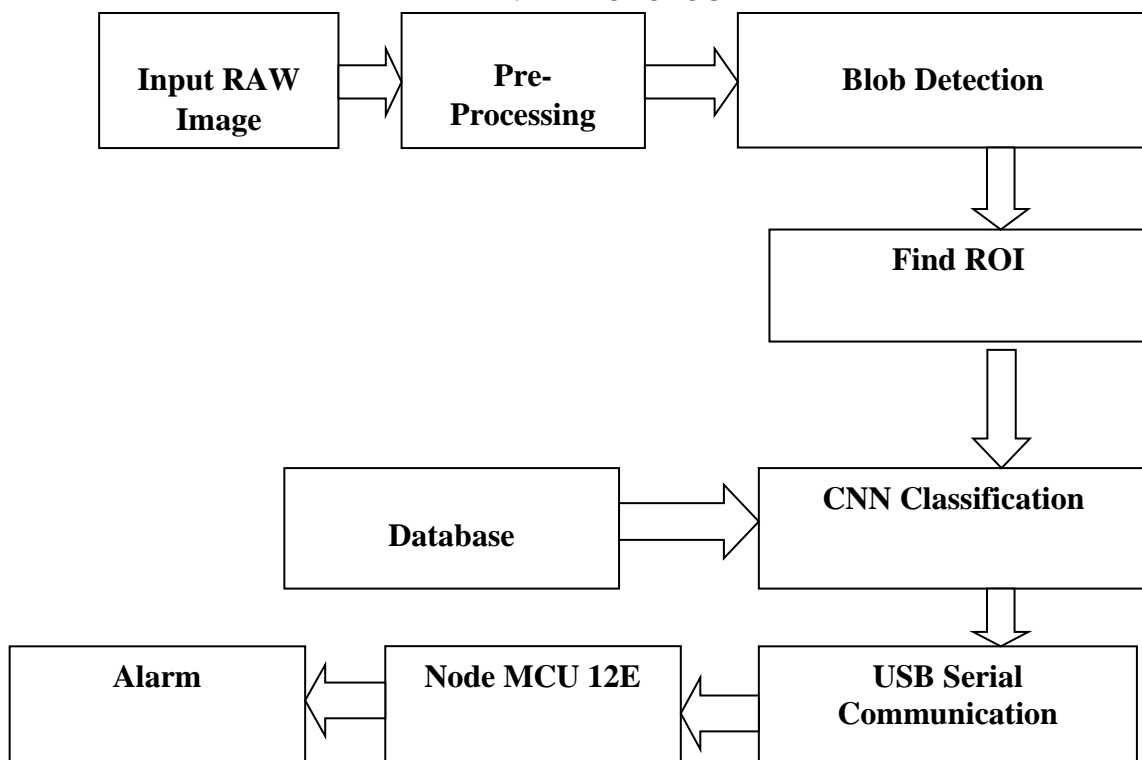
Basic design flow of this project is shown in the figure. It consists of Raw input image section, RGB to Gray scale conversion, Noise Removal, Image Enhancement, Find ROI and animal Extracted and CNN classification section. Raw input image is given as input to RGB to Grayscale conversion section and this section convert color image into grayscale image which is understand by machine tool. Gray scale image noises are removed at noise remover section. Blob techniques used to detect animal from photos or video. CNN classification section finds ROI of the image and extract the animal part. Extracted image is compared with database to classify animal and display the result. After classification of animal command is given to Node MCU board through the serial communication board. In NodeMCU board program is updated turn ON whenever Wild animal Found.

III. RESULT AND ANALYSIS

Fig1: CNN Based Animal Detection code opened

Fig 2: Run Project Main Project Main Model

Fig 3: Home Animal cow is taken as test image at in front of webcam.
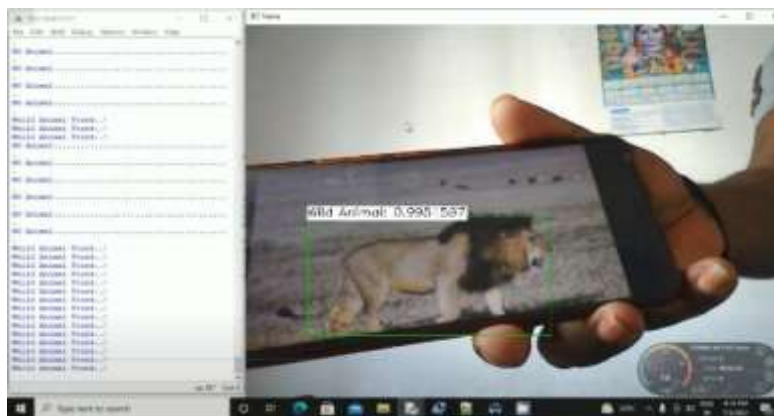

Fig 4: Another one Lion image is tested successfully for classification and alert Purpose

Fig 5: Complete Setup Hardware (Node MCU Board, Alarm board) and Software Model (Python-Opencv)

IV. CONCLUSION

Deep leaning based Animal detection and alert system has been designed and demonstrated successfully. Thus, this project uses Convolutional Neural Network (CNN) algorithm to detect wild animals. The algorithm classifies animals efficiently with a good number of accuracy and also the image of the detected animal is displayed for a better result so that it can be used for other purposes such as detecting wild animals entering into human habitat and to prevent wildlife poaching and even human animal conflict. Node MCU based smart alarm system has been designed and tested.

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