Automatic Animal Detection using Neural Classifier in CCTV Surveillance

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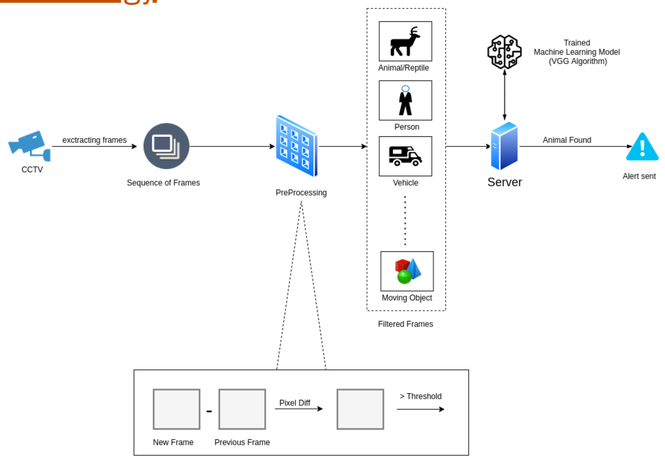
Introduction

- It has been observed that wild animals are making entries to apartments which are situated close to wildlife sanctuaries and national parks. CCTV cameras installed in these apartments are capturing these videos, but not being regularly monitored by security guards.
- One must look at the video footage which is time consuming and laborious to be handled by human operators.
- Hence, there is need to develop intelligent video analytics algorithms which work on the video feeds coming from the CCTV cameras in real time for detection of wild animals. On detection, alerts in the form of SMS/MMS should be sent to the security guards.

Objectives

- Processing CCTV video stream and implementing background subtraction to identify potential input frames for the network.
- Building a convolution neural network model for detecting animals in the video frames.
- Improvising the model to identify the categories of the animals detected.
- If wild animals are detected in urban areas, notify the appropriate authorities.

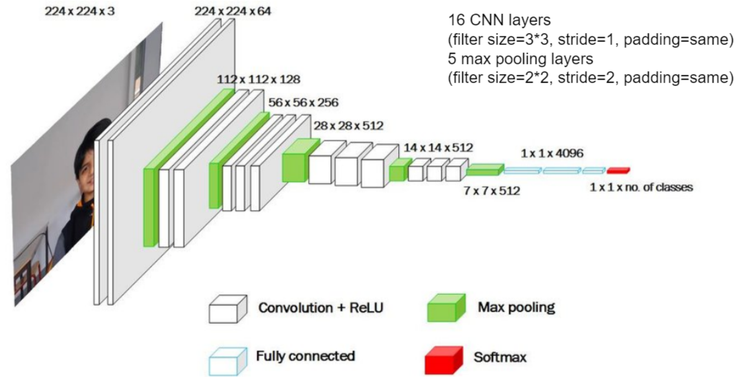
Methodology



Results

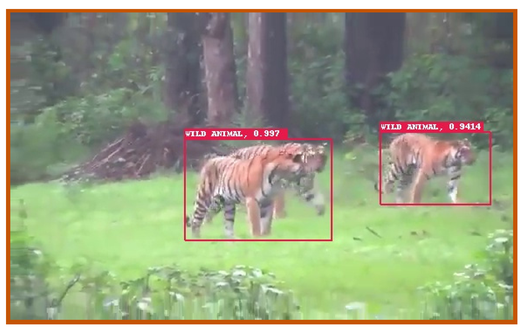
- This project helps in reducing the accidents happening such as the wild animal attacks in the residential areas and tackle the same at the ground level.
- The project successfully detects any wild animal present in the frame extracted and sends an alert to the concerned authorities.
- With more datasets, the accuracy of the model can be improved in the future.
- More classes of wild animals can be added as a future enhancement.

VGG16 Architecture



- VGG16 is regarded as one of the best vision model CNN architectures ever created.
- In VGG, rather than having a huge number of hyper-parameters, focus is on having 3x3 filter convolution layers with a stride 1 and same padding and a max pool layer of 2x2 filter stride.
- It has three Fully connected layers in the end, followed by a softmax for output. The 16 in VGG16 alludes to the fact that it contains 16 layers with different weights.

Video Surveillance Test Results



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