

## Object Counting using Deep Learning

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**Abstract:** In this paper, we consider the Problem of Object counting in deep learning. It is frequently carried out in different place of industries, school and colleges, traffic places among others. Object counting is major for quantitative analyses that rely on evaluation on certain objects. In this work, we propose a deep learning to find this challenge. Unfortunately, Object counting is most commonly a manual task and can be time intensive. As a result, we manage both to increase the accuracy count and decrease the processing time. A Deep Learning based system can be used for real time applications.

**Keywords:** Object counting, Objects, Deep learning.

### 1. Introduction

Object counting is a very routine task performed in different Places. Figuring out how many objects in an image is required in video stream. Object counting is used to get certain number of objects from images. Here, we focus to automate the difficult method of counting objects. Our methodology takes on a single step approach that is counting the object. Because automatic counting is intent, authentic and replicable is more accurate with automatic counting than with manual counting. While a user ordinarily gets a separate result in each measurement when counting manually, automatic counting obtains constantly a same value. It becomes difficulty when separate objects are not easily recognizable, different in size and envired by noisy circumstances. Deep Learning is used for count the object in different places like industries, traffic areas, etc... Deep Learning teaches the system automatically using the given information. In this paper, we propose the data will be pre – trained model. The pre – trained data is provided by the user so that its get trained. Count the object is done with the help of live video or images. The system developed to detect the objects from the given input image or video file and make count the recognized objects.

### 2. Literature Survey

There is lot of studies done on deep learning techniques for object counting. They are as follows:

Ujwala Bhangale , Suchitra Patil, Vaibhav Vishwanath, Parth Thakker, Amey Bansode , Devesh Navandhar[1] studied counting the crowd using Deep-Convolution Neural Network (DCNN).They mainly focuses on crowd counting.It concludes that this method is useful for real time traffic jams, malls etc...

Akbar Khan, Jawad Ali Shah, Kushsairy Kadir, Waleed Albattah and Faizullah Khan[2] considered 2 methods of crowd monitoring and localization are included. Deep Convolutional Neural Network (DCNN) is used for crowd monitoring and Shallow Deep Convolutional Neural Network (SD-CNN) is used for crowd localization. The advantages of this paper are accurate counting.

Kazuhiko Hashimoto, Chihiro Kawaguchi, Sataoshi Matsueda Katsuya Morinaka,nobuyuki Yoshiike[3] for detect and count people using a multi sensing eight array detector with the movement direction. The number of passing people and their direction of movement are recognized by a “pattern recognition algorithm”. The dataset is used for this method is Real-time images from surveillance camera. Accuracy obtained from this method is 95%.

Mehmet Baygin, Mehmet Karakose[4] to design image processing based object counting approach for virtual machine application. In this paper we use 5 methods for object counting that is Gaussian filter, S channel, Otsu threshold, Sobel edge detection, Hough transform. The benefits of this paper are low instalment, maintenance costs and fast accurate.

Victor Lempitsky, Andrew Zisserman[5] to estimate and count the number of objects in a images or videos. We propose a supervised learning for object counting. The advantages of this paper are very flexible.

Zhang Z, Wu F [6] to count and monitoring the people in the crowd using Convolution Neural Network(CNN). The UCSD pedestrian dataset contains 2000 frames of single scene. The video in this dataset is recorded at 10fps with the frame size of 158 X 238. The benefits of this paper are can solve many real-life problem, significant performance.

### 3. PROPOSED SYSTEM

The proposed method for object counting is

#### ***Input image:***

Input image module can be describe as process called image acquisition. Which means capturing of image or videos from real time but it is very difficult to perform the detection and counting process from streaming level because all required abstractions are in the single frame level some gather .the image in frame level .then we need set the level of difference between two set the level of difference between two image, the background and the image with moving objects.

#### ***Detect the objects:***

Detection is done by the value of difference is greater than the levels of difference .we assume that there are some objects in the scene and then they have to calculate the approximate size of the objects that we are have to detect using the height of the video camera and the size of the object that we have gathered before.

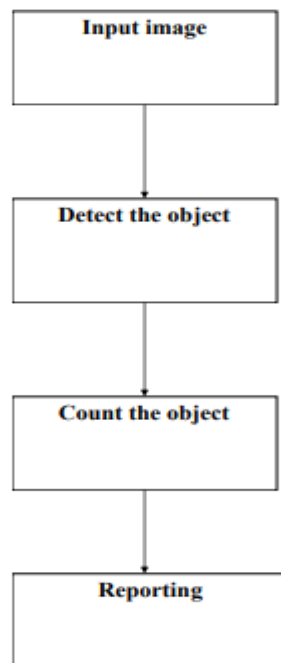


Fig. 1 A block diagram of proposed method

#### ***Count the objects:***

The process called image analysis is in charge of finding the number of the objects. That are moving in the detection are by using the technique called pattern matching. Then we will get the number of objects in the frames.

#### ***Reporting:***

The number of object that are detected will be collected in the excel file to the analyzed later.

#### 4. CONCLUSION

Deep learning techniques are helpful for object counting and reduce the time of counting effectively. Proper detection of the object is more important for object counting. The method can measure accurately, fastly and with high accuracy.

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