IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 8, Issue 8, August 2020

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.488

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | Impact Factor: 7.488 |

|| Volume 8, Issue 8, August 2020 ||

People Count and Person Identification from a Video in a Crowded Area

Nelavalli Praneeth[1], Nelavalli Bhargav[2], Kamireddy[3], Vikram[4], S.Suthir[5]

UG Student, Dept of CSE, Panimalar Engineering College, Chennai, India[1,2,3,4]

Professor, Dept of CSE, Panimalar Engineering College, Chennai, India[5]

ABSTRACT: Crowd counting from unconstrained scene images is a crucial task in many real-world applications like urban surveillance and management, but it is greatly challenged by the camera's perspective that causes huge appearance variations in people's scales and rotations. Conventional methods address such challenges by resorting to fixed multi-scale architectures that are often unable to cover the largely varied scales while ignoring the rotation variations. We propose a neural network framework, named Deep Recurrent Spatial Aware Network, which adaptively addresses the two issues in a learnable spatial transform module with a region-wise refinement process.This project uses a image recognition technique to count the people head count. This system requires input video frames which gets processed and gives the result of people count present in that video.

I.INTRODUCTION

The automatic analysis of crowd has been a particular security technique in the current intelligent surveillance literature. Which will prevent severe accidents by providing crucial information about the number of people and crowd density in a scene. Therefore, crowd counting and analysis has become an active topic in the computer vision literature due to its extensive application video surveillance, traffic monitoring, public safety, and urban planning. However, the current intelligent surveillance system is still incapable of handling a large-scale crowded environment with severe occlusion and non-uniformity. People-Counting technology can be generalized into two kinds of literature. Detection methods and Regression methods. Traditional approaches for crowd counting from images relied on hand-crafted representations to extract low-level features. These features were then mapped for counting or generating density maps via various regression techniques. To the best of our knowledge, the traditional methods are hampered in dense crowds, and the performance is far from expected. Inspired by the success of Convolution Neural Networks (CNN) for various computer vision tasks, many types of CNN-based methods have been developed, Concerning receptive field and the loss of details issues, the algorithms that can achieve better accuracy still have some limited capabilities, and specific CNN-based methods individually meet the problem of utilizing features at different scales via multi-column or recover spatial resolution via transposed convolutions in CNN-based cascaded multi-task learning network. Though these methods demonstrated robustness to similar issues, they are still restricted to the various scales and limited capacity to learn well-generalized models. Multi-source information is utilized to regress the crowd counts in high dense crowd images. Later, instead of regressing the count directly, the appearances of crowds are prepared by regressing the CNN feature maps as crowd density maps. Similar frameworks are also developed in Reference. Better performance can be obtained by further exploiting switching structures or contextual correlations using LSTM. Though estimation by regression is reliable in crowded scenes, without information of object location, their predictions for low-density crowds tend to be overestimated.

Understanding object detection *vs.* object tracking

There is a fundamental difference between object detection and object tracking that you must understand before we proceed with the rest of this tutorial.

When we apply object detection we are determining where in an image/frame an object is. An object detector is also typically more computationally expensive, and therefore slower, than an object tracking algorithm. Examples of object detection algorithms include Haar cascades, HOG + Linear SVM, and deep learning-based object detectors such as Faster R-CNNs, YOLO, and Single Shot Detectors (SSDs).

An object tracker, on the other hand, will accept the input *(x, y)*-coordinates of where an object is in an image and will:

1. Assign a unique ID to that particular object
2. Track the object as it moves around a video stream, predicting the new object location in the next frame based on various attributes of the frame (gradient, optical flow, etc.)

Examples of object tracking algorithms include MedianFlow, MOSSE, GOTURN, kernalized correlation filters, and discriminative correlation filters, to name a few.

II.LITERATURE SURVEY

2.1.People counting and pedestrian flow statistics based on convolution neural network and recurrent neural network

People counting and pedestrian flow statistics are challenging tasks because of the perspective distortions, appearance changes and occlusion. In this paper, we address the two tasks: people counting in images of highly dense crowds and pedestrian flow statistics in a place over a period of time. Our first contribution is to propose a new convolution neural network model which is composed of a deep and shallow fully convolution network to fulfill the task of people counting. We extract different layer features from the deep fully convolution network and the last layer features from the shallow fully convolution network, and concatenate them together. After that we add two de-convolution layers to make the output image have the same resolution with the input image. Our second contribution is to combine pedestrian flow statistics task with people counting task. According to the density maps that CNN model generates, we can calculate the number of people crossing a place based on the Recurrent Neural Network. Besides, we also have collected two datasets and labeled them. Extensive experiments have been implemented, our people counting method outperforms other existing methods, and our pedestrian flow statistics method combined with CNN model also outperforms the model which only uses long-short term memory.

2.2. An effective approach to crowd counting with CNN-based statistical features

Recent works on crowd counting have achieved promising performance by employing the Convolution Neural Network based features. These works usually design a deep network to detect pedestrian heads, and then count them. In this paper, we propose a novel approach to count pedestrians effectively based on the statistical CNN features. In particular, our approach only uses the first layer features of the CNN pre-trained offline on Image Net, and thus obtains an efficient solution for crowd counting. Then, by analyzing the statistical properties of the first layer features, we observed the number of people fluctuates according to the value of the statistical features. Therefore, we employ these statistical features to train SVM, and can thus directly obtain the number of pedestrians. Experimental results on standard benchmark, UCSD, verify the effectiveness of the proposed approach.

2.3. Crowd Scene Analysis Using Deep Learning Network

Crowd scene analysis is the certification tasks in crowded scene understanding. Crowd is a same or different set of people arranged in one group. Generally crowd form in the way of pedestrians, supermarket, and marathons. In this paper introduce Convolution Neural Networks and deep learning model is used for the analysis of crowd scene. In these paper propose, findings the number of people arrived in one group and also finds the crowd density map. People counting in extremely dense crowds are an important step for video surveillance and anomaly warning. The above mentioned works, Several problems becomes especially more challenging due to the lack of training samples, severe blockages, disorder scenes, and modification of perspective. In existing methods estimating crowd count using handcrafted features.

III.EXISTING SYSTEM

Crowd scene analysis is the certification tasks in crowded scene understanding. Crowd is a same or different set of people arranged in one group. Generally crowd form in the way of pedestrians, supermarket, and marathons. In this paper introduce Convolution Neural Networks and deep learning model is used for the analysis of crowd scene. In these paper propose, findings the number of people arrived in one group and also finds the crowd density map. People counting in extremely dense crowds are an important step for video surveillance and anomaly warning. The above mentioned works, Several problems becomes especially more challenging due to the lack of training samples, severe blockages, disorder scenes, and modification of perspective. In existing methods estimating crowd count using handcrafted features such as SIFTS and HOG. In current vision most suited method is to predict the better performance of estimating crowd density and crowd count based on deep learning network. 3D volumes video slices can be arranged in sequential manner.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | Impact Factor: 7.488 |

|| Volume 8, Issue 8, August 2020 ||

IV. PROPOSED SYSTEM

- The schematics of the proposed approach for people counting are illustrated in our method perform counting by analyzing the depth video frames retrieved from the RGBD camera. The major steps involved in our approach are;
- Removing the scene background,
- Re-projecting point cloud onto the ground plane,
- Generating candidate head proposals in the projected images,
- Refining those proposals, and
- Tracking the trajectories of human heads for counting.

V.RESULTS

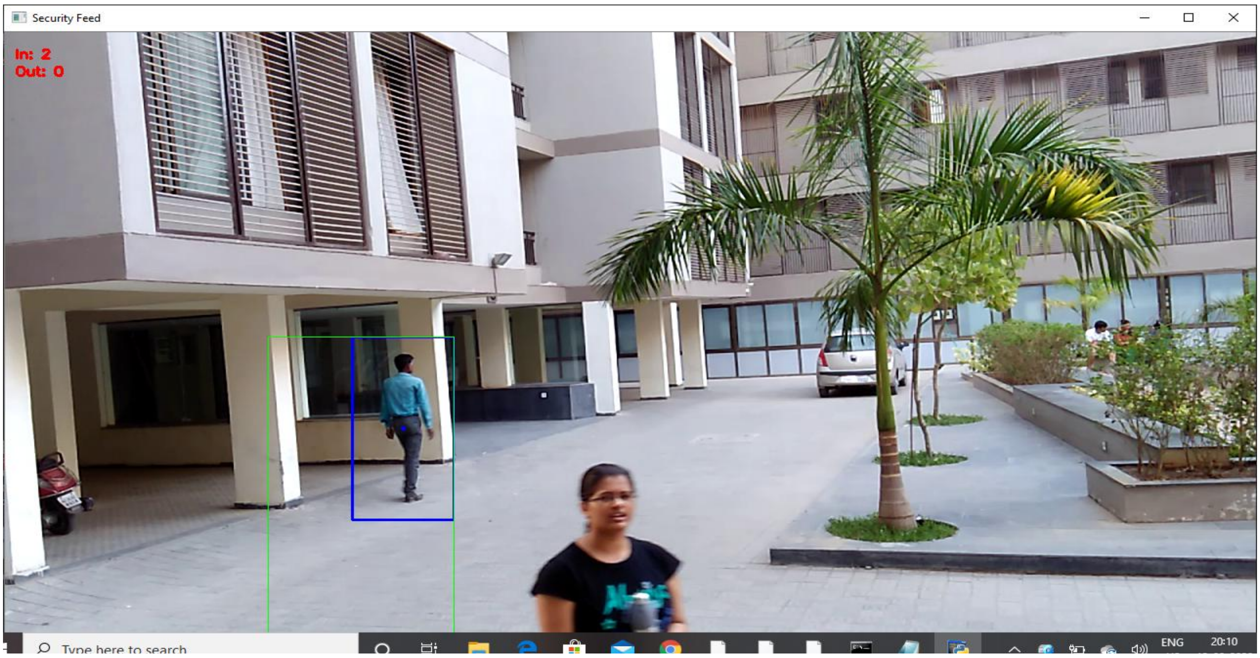

Figure 1 : Snapshot of counting people from a video on realtime.

Figure 2: Separately stored image of a person with removed background.

VI.CONCLUSION

We have achieved an efficient way to count number of people in a video by using an optimised algorithm which processes the video frames precisely and gives best output.Background removal and reprojection of video frames make it more easier and efficient to process and analyze the video frames.The whole process of people counting is also made easier by executing the tasks properly which made it not just faster but also less hardware consuming.

VII.FUTURE ENHANCEMENTS

This Project can be enhanced in various ways,

i. Can be used in mass populated areas to find the people density in the covered area.

ii. The whole surveillance and counting of people in a larger area with different camera perspectives can also be automated and can prevent counting the same person multiple times.

iii. If proper hardware like a realtime database and high processing power is provided, then we can use this project to not just counting but also to capture and store the images of the voters in a polling station which can avoid massive malpractice.

REFERENCES

[1] O. a. Arandjelovic. Crowd detection from still images. In BMVC, pages 53.1–53, 2008.

[2] P. F. Felzenszwalb, R. B. Girshick, D. A. McAllester, and D. Ramanan. Object detection with discriminatively trained part-based models. TPAMI, 32(9):1627–1645, 2010.

[3] W. Ge and R. Collins. Marked point processes for crowd counting. In CVPR 2009, pages 2913–2920, 2009.

[4] R. B. Girshick, J. Donahue, T. Darrell, and J. Malik. Rich feature hierarchies for accurate object detection and semantic segmentation. In CVPR 2014, pages 580–587, 2014

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING