Retraction

Retraction: A Safety Measuring Tool to Maintain Social Distancing On COVID-19 Using Deep Learning Approach (J. Phys.: Conf. Ser. 1916 012122)

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This article (and all articles in the proceedings volume relating to the same conference) has been retracted by IOP Publishing following an extensive investigation in line with the COPE guidelines. This investigation has uncovered evidence of systematic manipulation of the publication process and considerable citation manipulation.

IOP Publishing respectfully requests that readers consider all work within this volume potentially unreliable, as the volume has not been through a credible peer review process.

IOP Publishing regrets that our usual quality checks did not identify these issues before publication, and have since put additional measures in place to try to prevent these issues from reoccurring. IOP Publishing wishes to credit anonymous whistleblowers and the Problematic Paper Screener [1] for bringing some of the above issues to our attention, prompting us to investigate further.

[1] Cabanac G, Labbé C and Magazinov A 2021 arXiv:2107.06751v1

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A Safety Measuring Tool to Maintain Social Distancing On COVID-19 Using Deep Learning Approach

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Abstract. Due to this recent wave of the Deadly corona virus disease, which has spread widely all over the world, so physical or Social distancing has become a mandatory precaution to avoid close contact. As of January 2021, the count of affected cases is 10.8 million and recovered cases are 10.5 million and the death rate is 155 thousand. In conformity, we have proposed a system that elucidates the usage of Python, computer vision, and deep learning to monitor whether people are maintaining Social distance at public areas in roads, pathways, work places and, even in hospitals. For the purpose of monitoring social distances among people, we have developed a social distancing detection tool that can keep track of safe distance and determine the distance between people in order to reduce the impact of the corona virus pandemic by analyzing real-time video Streaming, such as CCTV or Camera which can be added with the security camera system at hospitals, workplaces, markets, Jewelers shop etc. As an output, the detection tool will throw A Voice alert or a Notification, so that people would be remained to maintain a social distance.

Keywords: COVID-19 pandemic, social distancing, people detection, CCTV, computer vision, python

1. Introduction

Reduction of physical contact is that the commencer of public health measures aimed toward flattering the COVID-19 virus spread between people supported touch or physical contact. This also entails staying healthy by avoiding congregate environments, avoiding large mass meetings, and keeping a safe distance (approximately 2 meters) from others. It becomes specifically important as an element of the human community to bring the notice among the people before vaccines or drugs become available for everybody. An approximate calculation of social distancing measures showcases that, a Covid19 positive person can infect four hundred and six people in just thirty days. If social distancing steps aren't followed, the risk of virus transmission increases by 75 percent, and an infected person will only infect 2.5 more people over the course of 30 days.

The union and state governments both released social distancing guidelines as COVID-19 spread throughout India. The union government has suggested, among other things, shutting down all of the state’s airports. Until March 31, 2020, the Delhi state government has outlawed “religious, social, cultural, and political gatherings, as well as demonstrations involving more than 50 people”. Several other states have also issued alerts Due to the impact of Covid19 from March 25, 2020; the second
lockdown was proposed for three weeks and it was also extended until May 3rd, 2020. Restricted actions are enacted as representatives in private areas such as telecommuting areas, direct gatherings through video conferencing offices, People should avoid such possible activities by maintaining a safe distance of 1 meter between tables in eateries, between people in mass gatherings, clients in shops, and so on; confining planned weddings to a restricted gathering; and so on. (Government of India, educational foundations (e.g., NITI Aayog, NITI Aayog, NITI Aayog, NITI Aayog) During the lockdowns, only limited drills were permitted. At this time, public transit and educational institutions were closed. Just explicit mechanical and business exercises and neighborliness administrations were permitted to work. Film lobbies, shopping centers, shopping edifices, and other public spots were closed down. Social affairs were denied. This will incorporate every one of the neighborhoods as friendly/political/sports/amusement/scholarly/social/strict capacities/different get-togethers. Spots of love were shut for the general population. Memorial services could be gone to by a limit of 20 individuals (Government of India, 2020). The standards are being facilitated bit by bit.

Thus, the lockdowns and the Social Distance Guidelines are working together on people for awareness. The Social Distance rules and protocols should be abided by everyone and are mandatory too. Lockdowns, on the other hand, are imposed by all states. As Lockdowns are fighting like a vaccine against the virus, they are in towards the controlling of COVID-19 and restrictions are abided for specific areas by halting activities. They also improve the security and awareness with social distance guidelines, especially in public places. However, if the lockdowns are consistently extended in a nation, there would be a massive flatter curve in economy of their nation and also people would suffer without jobs and Covid19 is also expected to last for many years. The younger unity awareness of social distance measures will continue to help reduce the spread of the disease. Consistent or intermittent social distances could be sufficient until 2022 to recover the damage caused by COVID-19, according to estimates. In this proposed system we have built a tool to detect the persons in public areas via CCTVs, camera, web camera using deep learning and computer vision technology in which open cv python along with csdsknet53, yolov3 algorithm including COCO datasets as this evaluates the distance between the two people using Euclidean formula and output is displayed as a bounding box around the detected person in red (if the person is close in contact that is <1- meter distance with another person)and green (if one person maintains > 1-meter distance with another person) as shown in Figure 1.

At the end of the output displayed we will have the overall head(people) counts in that particular public area and a total number of counts in green bounding boxes and red bounding boxes and voice message alert will be heard when persons are detected in red bounding boxes. so, this alert message will be a precaution and awareness to flatter the curve of COVID-19 in the future.

Figure 1. Social Distance
2. Literature Survey

Maintain a good larger distance between yourself and others once inside. The farther away, the safer. Carrying a mask has been a natural a part of being around others. Affordable use, storage and cleanup or disposal area unit necessary if masks area unit to be created as made as potential. In this analysis paper, used object detection to stay track of safe distance between folks. CCTVs and Drones are used for human detection. Electric circuit tv (CCTV) are used as a way of police work, however thanks to its limitations, it's not fully accustomed. Initially object detection is applied to detect objects during a video stream or capturing a picture on mobile or employing a camera, in associate adding that captured image as an input to the present formula, the pair wise distances between all detected people are calculated and finally, these distances are compared with the standard distance that should be maintained reliably. The drone which has a larger affiliation to the remainder of the swarm is used, in a specific region to detect the human, whereas additionally another drone is used in parallel separating the areas between the drones thus as to not lose track of the creature. Open CV, laptop, computer vision and deep learning area unit specially used to track social distances throughout the (6feet or 2meters) distances and are represented by red frame if they are violated and a green frame vice versa. So, if 5-6 folks gather around in a specific space, the native authorities or the native police stations are directly notified. Recently, during the eruption of the Covid-19 virus, the police. Authorities were in need to regulate town by investing their whole time unnecessarily. Despite reducing their risks, using this idea of social distancing detection, the police are able to monitor and reach the exact location and manage the state of affairs directly. Thus, social distancing will be controlled and indirectly the spread of COVID-19 will be prevented and lives will be saved from this epidemic virus [1].

Person Detection for Social Distancing and Safety Violation Alert supported metameric ROI which was experimented by Afiq Harith Ahamad and his co-authors in 2020. Their scientific method uses Mobile web Single Shot Multibox Detector (SSD) object pursuit model on police investigation folks and image processing exploitation Open CV library. Detects the person's distance to be calculated and compared to the set picture element values within the recorded video. The space between the central points and therefore the overlapping boundary between the persons within the metameric observance region was also measured. With this identification, folks in unsafe area or in unsafe distance, alerts or warnings are thrown to stay in social distances. The most important feature of the device, is that the pre-processing detection [2].

Crowd detection and management using computer vision and Open CV Python this system is proposed by Dr. SSyed Ameer Abbas and his co-authors in 2017. In this paper we have understood that, they have used a cascade classifier which has been trained for capturing the images of the folks within the scene and trained exploitation Haar options through Open CV. In their study whole plan was to record the ganged scene employing a camera and Raspberry pi3 board that encompasses a quad-core ARMv8 central process unit that processes the video, frame- by -frame that detects the human heads and provide a count of humans within the specified region. Open CV is measured and manages the crowd in any area especially vast crowds [3].

A complete model and Object detection algorithms that was experimented by Louis Eugene Felix Neel Bhave and his co-authors in 2019. They used YOLO (You solely Look Once) period of time Object Detection makes but 0.5 the amount of background errors, is way quicker and, offer Associate in Nursing correct result that will be trained for over two hundred categories. Rising learning is that the preparation of machine learning models to form a series of selections. The agent learns the way to succeed a goal in an unplanned, doubtless complicated environment. Monitoring Social Distancing for Covid-19 exploitation OpenCV and Deep Learning is planned by Rucha Visual and his co-authors in 2020. Their scientific method uses Open-CV that's done through laptop vision and Deep learning. Their implementation will be done exploitation CCTV, Drones where the
camera for image or frame by frame exploitation object detection and figure the pairwise distances between centroids of 2 people's distance is calculated exploitation geometrician distance in pixels and compared to the given standard distances [4].

System of traffic density identification which is proposed by Joel Joseph Joy and his co-authors in 2018. Their system is based on image processing. Images are taken from the camera and are recorded for queue length and traffic densities. symbolic logic was applied to handle the ideas of partial truth wherever video input was taken. The results of partial truth concept that may be successfully implemented in future at any place between completely true and false [5].

3. Yolo Models

YOLOv3

In this post, we'll clarify why the publishing of YOLOv3 has spread so quickly across the internet. What is the significance of the term "super-network"? That it will transform the world in the same way as YOLOv1 did. Figure 2 shows The speed and accuracy of PP-YOLO

Most many people in the sector today are familiar with YOLOv2, that has already shown impressive results. However, YOLOv3 has recently improved in terms of precision (avg precision) and speed (FPS)—the 2 criteria that we typically use to assess an object detection algorithm:

![Figure 2. The speed and accuracy of PP-YOLO (source: PP-YOLO repo)](source: PP-YOLO repo)

As shown above, YOLOv4 appears to have cutting-edge accuracy while maintaining a fast-processing frame rate. It achieves an AP precision of 43.5 percent for the MS COCO and an estimate speed of about 65 FPS for the Tesla V100. In the field of target detection, high accuracy is no longer the only holy grail. On edge computers, we need the project to operate smoothly. Real-time video input analysis with reduced hardware is becoming increasingly important.

YoloV4 is an innovative mechanism that builds on YoloV3. The introduction of new architecture in the Backbone and changes in the Neck increased the mean Average Precision by 10% and the Frame per second by 12%. In addition, different models or labels are being trained in this neural network on a single GPU has now become easier.

We'll make you to understand about YoloV3's layers and their working

**Backbone**

This is a deep neural network made up entirely of fully connected layers. The backbone's main aim is to disable the main characteristics, and choosing the backbone is an essential step in enhancing the efficiency of image recognition. In certain cases, pre-trained neural networks are used to build the backbone.
The YoloV4 backbone architecture is made up of three components:

- Specials in a pack
- Bag of specials
- CSPDarknet53 is an abbreviation for Computer Science and Physics Darknet

Bag of freebies

Many of these meanings will be explained in the following pages.

**Bag of freebies**

A bag of freebies approach is a group of approaches that only raise the cost of training or change the training methodology while keeping the cost of inference low. Let’s go into those fundamental approaches used in machine vision. Figure 3 shows Stage Methods.

### Data Augmentation

The primary aim of data augmentation is to maximize image uncertainty in order to improve model training generalization as shown in Figure 4.

### Multi Labels Prediction

An object in some datasets, such as the Open Image Dataset, can have multiple labels. An item, for example, can be labelled as both a woman and a person.

This dataset contains several overlapping labels. When using SoftMax to replicate groups, it is presumed that each box has exactly one class; however, this might not be the case, as in Open Image Dataset.

As an outcome, YOLOv3 does not use SoftMax, but rather separate strategic classifiers for each class. During analysis, binary cross-entropy losses were used for class predictions as shown in Figure 4.
5.
Using different logistic classifiers, a person may be detected alongside a woman and a male.

Figure 5. Multilabel Prediction

4. Methodology

Step 1: Check performance
This function is used to calculate the distance between two image points (a and b) (one video frame). Two dots represent the people found in the video in between. The distance to be determined by the Euclidean distance between the two points.

The rating is used to determine the area between two points, and the argument 'if' returns 'True' if the error was within the limit, if not 'False'.

B Step 2: Setup task
This feature takes the 'Yolo' input argument, which is a string that usually contains a blank guide where 'instruments,' 'cfg,' and 'labels' are written.
To wisely join one or more of the paths, use the os.path.sep.join() function. Simply put, it saves the files "yolov3.weights," "yolov3.cfg," and "coco. Names" in the "Yolo" index.

The 'net' variable is used to retrieve network model from Darknet model files.
The 'ln' method is used to find all the independent network layers, such as 'com' 89, " conv 89, " bn 89, " '90', " 90 '90', and only the background indicators for different effects are being considered. ["That 82," 'yolo 94, "and' yolo 106"].

C Step 3: Picture Process Work
This is the most difficult task of our apps. Claim for this purpose is a single image from the video. Each iteration processes each image of a video frame, and the detection of public distance between each person in the crowd is tested, and sent to the main task [6].

D Step 4: Input parameters
In this case, we are implementing input media files such as ‘filename’ and existing revenue, which will be upgraded in .mp4 format, such as ‘opname.’

E Step 5: Main activity
We have reached the final stage of the code. In this case, the result of the merger is divided into a few independent, each of which performs the functions described above.
Once this is complete, the entire output frame is available and integrated to create an outgoing video. Task time (\(T\)) calculates the time required to complete all tasks. The longer the video, the longer it takes to process it. In our example, it took about 150 seconds to process a video in 3-step video output and community-wide acquisition [7].

5. Flowchart of Proposed System

Below we have displayed the flow process of our project in which the entire process of implementing the social detecting detector tool where the input image is processed first and then goes through a lot of layers in Yolo v3 and captured image is displayed in some seconds with bounding boxes. thus, the flow chart below describes as shown in Figure 6. Figures 7 and 8 shows the result.

6. Our Proposed System Output
Figure 8. Displays Green Alert Message

7. Conclusion

Major events bring about changes in society. Social distancing measures are ought to be followed by everyone to minimize the spread of COVID-19. Eventually, maintaining social distance becomes a habit in the future. Owing to that, our proposed system gives an accurate output of 90% at detecting people with a one-meter distance between them in public areas, which also provides indications in green and red bounding boxes around the people. Human beings are social animals. So, in the future, our proposed system can be developed for further use regarding this COVID-19 and for other diseases too.

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