LITERATURE REVIEW

Name :- Shreyas Kotkar   **Div:- D12C**   **Roll No :- 34**

Narinder Singh Punn, Sanjay Kumar Sonbhadra and Sonali Agarwal , (2020) , studied on automating the process of Social distance via Object detection and tracking approaches.They tried to identify clusters or groups of people satisfying closeness property with help of pairwise vectorized approach. The extensive trials were conducted with popular state-of-the-art object detection models: Faster RCNN, SSD, and YOLO v3, where YOLO v3 illustrated the efficient performance with balanced mAP and FPS score to monitor Social Distance in real time.

Derek K Chu, Elie A Akl, Stephanie Duda, Karla Solo, Sally Yaacoub, Holger J Schünemann , (2020) , had a systematic review and meta-analysis to investigate the optimum distance for avoiding person to person virus transmission and to assess the use of face masks and eye protection to prevent transmission of virus (Covid-19). Researchers identified 172 studies for the systematic review from 16 countries across six continents and concluded that physical distancing of at least 1 m is strongly associated with protection, but distances of up to 2 m might be more effective and eye protection might provide additional benefits.

Lalitha Ramadass, Sushanth Arunachalam, Sagayasree Z, (2020), They proposed a system through Drone which checks social distance maintained by the people, then it checks whether people are wearing masks. If not, then the drone hovers towards the respective person and tells the importance of wearing mask and social distancing. Then it also instructs the user to use a sanitizer which is kept in the box, and then it tells the user to pick a mask and wear it.
The proposed system uses the You Only Look Once (YOLO-v3) Algorithm which is called as object detection algorithm to detect objects in an effective manner. The drone has a camera which is used to capture video as well as images and it also consists of a Global Positioning System (GPS) module for locating the drone. The system detects the social distance and masks with an accuracy score of 0.95 with confidence score.

A. S. M. Kayes, Md. Saiful Islam, Paul A. Watters, Alex Ng, Humayun Kayesh, (2020),
studied on Automated Measurement of Attitudes Towards Social Distancing Using Social Media. Researchers collected 100k tweets with hashtag #coronavirus within Australia. Out of these 100K tweets, 3,076 tweets contain the keyword 'social distancing' or hashtag #socialdistancing. They illustrated a wordcloud from these tweets and find the most prominent word in the wordcloud was 'social distancing' and they had results of 82.5% of tweets talk about 'Social Distancing'.

Name :- Yashkumar Jain   **Div:- D12B   Roll No :-24**

Enabling and Emerging Technologies for Social Distancing: A Comprehensive Survey

Published On :- 1 May 2020

Cong T. Nguyen, Yuris Mulya Saputra, Nguyen Van Huynh, Ngoc-Tan Nguyen, Tran Viet Khoa, Bui Minh Tuan, Diep N. Nguyen, Dinh Thai Hoang, Thang X. Vu, Eryk Dutkiewicz, Symeon Chatzinotas, Bjorn Ottersten , studying automate measure for social distancing. Basically it is telling us to use the latest technology like wireless and network, AI can be used in building a model. It also tells us to use technology like machine learning, computer vision, ultrasonic etc. to know who is infected near you,detect and monitor the quarantine and infected people. But these technologies can be misused and privacy of common people can be leaked which could be a big problem.

A Vision-based Social Distancing and Critical Density Detection System for COVID-19

Published On :- 7 Jul 2020

Dongfang Yang, Ekim Yurtsever, Vishnu Renganathan, Keith A. Redmill, Ümit Özgüner, this paper tells us to use AI technology to calculate the 6 feet(2 meter) distance. It will also warn the person using the technology without targeting the individual . Basically it works on 4 ethics :- (1) the system should never record/cache data, (2) the warnings should not target the individuals, (3) no human supervisor should be in the detection/warning loop, and (4) the code should be open-source and accessible to the public. It requires a monocular camera and deep learning to build the model and it will warn the individual without targeting the individual who breached the social distancing measure.

Algorithm for Face Detection Combining Geometry Constraints and Face-Mask

Published On :- June 12, 2013

Fu Yu , Ningbo Zhu , this article mainly focuses on how the face mask should be applied. It says that as the background of the mask changes the model may not be able to detect whether the person is wearing a mask or not in many cases. Basically for a small face some models were unable to detect. So this method combines geometry constraints and face-mask. The candidate faces can be detected by the geometry constraints between face and hair. The method based on the face-mask is employed to improve the detection accuracy. But it does not tell us whether a group of people is wearing a mask or not.

Face Recognition with Facial Mask Application and Neural Networks

Marco Grassi1 and Marcos Faundez-Zanuy , In this paper, it propose a very fast image pre-processing by the introduction of a linearly shaded elliptical mask centered over the faces. Used in association with DCT, for features extraction, and MPL and RBF Neural Networks, for classification, it allows an improvement of system performances without modifying the global computation weight and also a learning time reduction for MLP neural networks. But this paper also did not tell about whether a group is wearing a mask or not. During this pandemic whenever the social distancing rule is broken the second most important thing to save from getting infected is face mask. But this model does not tell us anything about people wearing masks when they are not following the social distancing rule.

Name :- Chirag Kinger   **Div:- D12C   Roll No :- 31**

Adrian Rosebrock on May 4, 2020,
discussed on detecting face masks with OpenCV and Keras/TensorFlow. He also discuss our two-phase COVID-19 face mask detector, detailing how our computer vision/deep learning pipeline will be implemented. They review each of these phases and associated subsets in detail in the remainder of this tutorial, but in the meantime, they look at the dataset be using to train our COVID-19 face mask detector. It also tell us whether a group of people is wearing a mask or not.

Alexandra Lotenzo on May 16, 2020,
Numerous papers and codes have been made to detect people wearing masks. Her goal is to create a transparent model from Open Source Data and Open Source packages. The proposed system uses the You Only Look Once (YOLO-v3) Algorithm which is called as object detection algorithm to detect objects in an effective manner. The drone has a camera which is used to capture video as well as images and it also consists of a Global Positioning System.

Gurucharan M K on May 30, 2020,
In these tough COVID-19 times, wouldn't it be satisfying to do something related to it? I decided to build a very simple and basic Convolutional Neural Network (CNN) model using TensorFlow with Keras library and OpenCV to detect if you are wearing a face mask to protect yourself. He discuss steps like Data Visualization, Data Augmentation, Splitting the data, Building the Model, Training the CNN model, Importing the Face detection Program, Detecting the Faces with and without Masks.

Johanna Pingel, June 11, 2020,

Using Deep Learning, they want to detect the presence of a person wearing a mask. We can envision a scenario where this would be useful: perhaps ensuring masks are being worn before entering a location where masks are required. It can be a time-consuming process to label all training images. They had chosen to implement 1-stage detectors like YOLO v2 and SSD for real-time inference of trained models. They generate code to accelerate inference. The is executed on GPU in MATLAB. In this way he implemented the demo of Mask Detection using MATLAB.

Name :- Vikram Virwani   **Div:- D12B   Roll No :- 68**

Parth Pathak, 27 May 2020

To help ensure social distancing prortocol in their workplace, I have developed an AI- enabled social distancing detection tool that can detect if people are keeping a safe distance from each other by aanalyzing real time video streams from the camera.The demos below will help to visually explain the approach that consists of:

1.Detect the humans in the frame with yolov3 convolutional neural network.

2.Calculate the distance between all the instances of humans detected in the frame.

3.Classify the determined distances as 'Alert' or 'OK' for social distancing.

Prajna,6 May 2020

Since there are no vaccines available, social distancing is tha only feasible approach to fight against this pandemic. The covid-19 face mask detectorcan be implemented by adding two more python scripts used to:

1.Detect covid-19 face masks in images.

2.Detect face masks in real-time video streams.

The goal is to train a custom deep learning model whether a person is or is not wearing a mask.Creating accustom computer vision Python script to add face masks to them,thereby creating an artificial(but still real-world applicable) dataset.

Tanvesh Bhattad, 11May 2020

 In this project we will discuss our two-phasae COVID-19 face mask detector,detailing how our computer vision/deep learning pipeline will be implemented. From there, we'll review the dataset we'll be using to train our custom face mask detector .I'll then show you how to implement a python script to train a face mask detector and review the results. The trained COVID-19 face mask detector ,we'll proceed to implement two more python scripts used to detect face mask in real time video stream.we'll be using python script to train a face mask detector the script additionallyis divided into two parts:

1. Detect COVID-19 face masks from image.

2. Detect face masks in real-time video.

Ravindu Senartane,25 May 2020

Our main focus is to detect whether a person is wearing a mask or not, without getting close to them. In simple words,first,we get the image with the face and run it through a cascade classifier. The Classifier will give the region of interest of the face. Secondly we will resize the region into a 100*100 and pass it to a pre-trained CNN, it will give us the probability as an output.