

System Overview: The system count people, detect distances, and people wearing medical mask



Image Sensor

Warning



Introduction

We introduce a smart device to track and maintain real-time physical distance between people and to warn people to any deviation from the prescribed distances. Social-distancing is an effective way of slowing infectious disease spread. People are advised to reduce their contacts with each other, thus reducing the chances of transmitting the disease through physical or near contact. We proposed a device to automate the task of tracking social distance using video surveillance and sensors. The new portable device can be used to detect moving objects and measure distance between people. The system collected sensor environmental information for commercial, industrial and governmental purposes.

The accuracy of detection using sensors can be helpful when it combined with the camera for computer vision task in term of visualization using camera and rebuses of detection using sensor. Both camera and sensor gauge the environment to detect moving objects simultaneously. To fuse detected people position by both sensors, two the coordinates of the sensors should be related in one coordinate.

Methodology

Our proposed method starts by segmenting the regions that include moving objects. Then, segmenting the infections in these regions. Then count people from drone and measure the gap between pedestrians in public places by publicly identifying and marking people who maintain safe distances, while at the same time flagging some instances in red where social distancing measures are violated. The system can track and detect distance kept in public spaces and workplaces. It will alert people who violate the social distancing (in Arabic and English).

Several image processing systems using AI have been released recently to detect social distancing. However our system using drone can be more robust and can detect people in any placr. Some other existing devices required everyone to wear the device. Our proposed device is independent of the user and can be used anywhere.

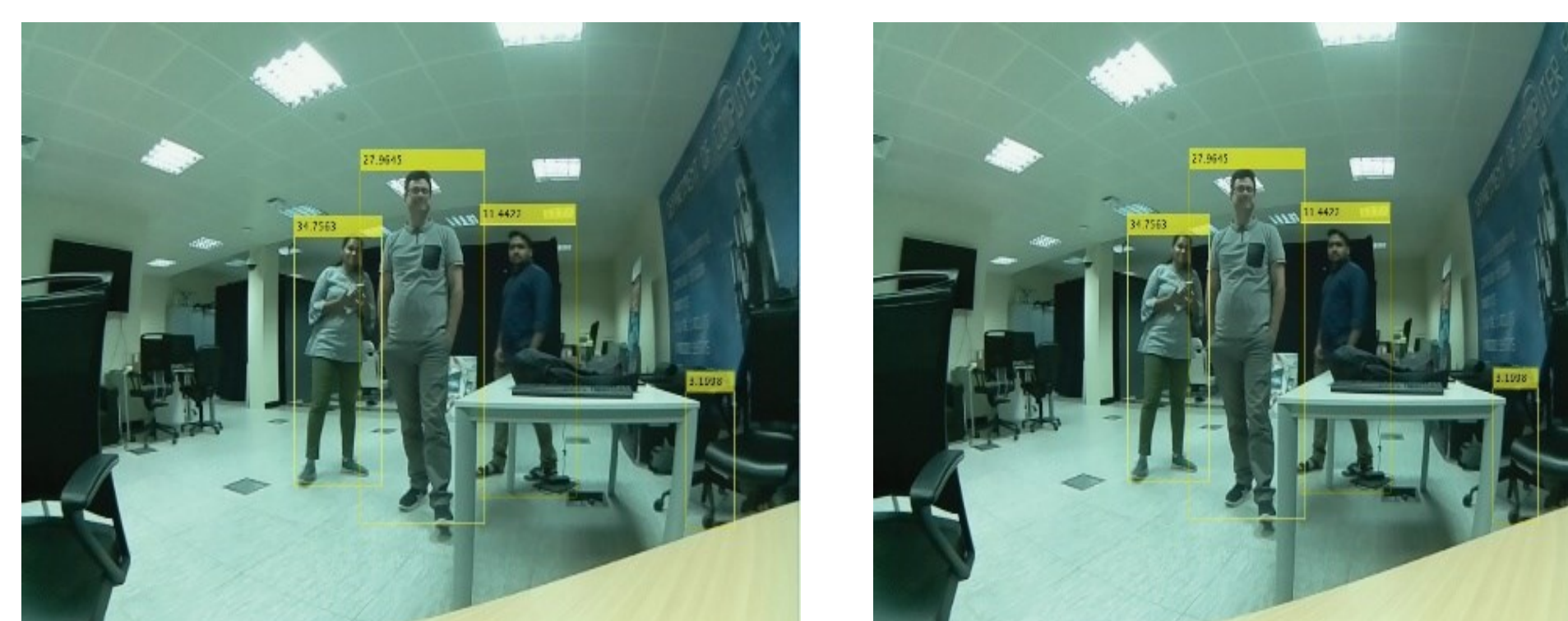


Ministry of Interior explains forms of gatherings which are prohibited by law [1]

Results

Comparison Results with Traditional State-of-the-art Methods

Method	PSNR	SSIM
BL 2019 [7]	29	0.8
CS Net (Ours)	30	0.9



Discussion

In a real time situation, detecting, tracking and recognizing people are one of the most attractive topics using collected environmental information by sensors for commercial, industrial and governmental aspects. The proposed method performs an accurate counting using deep learning for images taken from drones. To improve accuracy and simple use, we designed and implemented new smart drone application using camera with software to control it. The accuracy of detection using sensors can be helpful when it combines with the camera for computer vision task in term of visualization using camera and rebuses of detection. Furthermore, our system can be improved to detect faces as well as temperature.

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