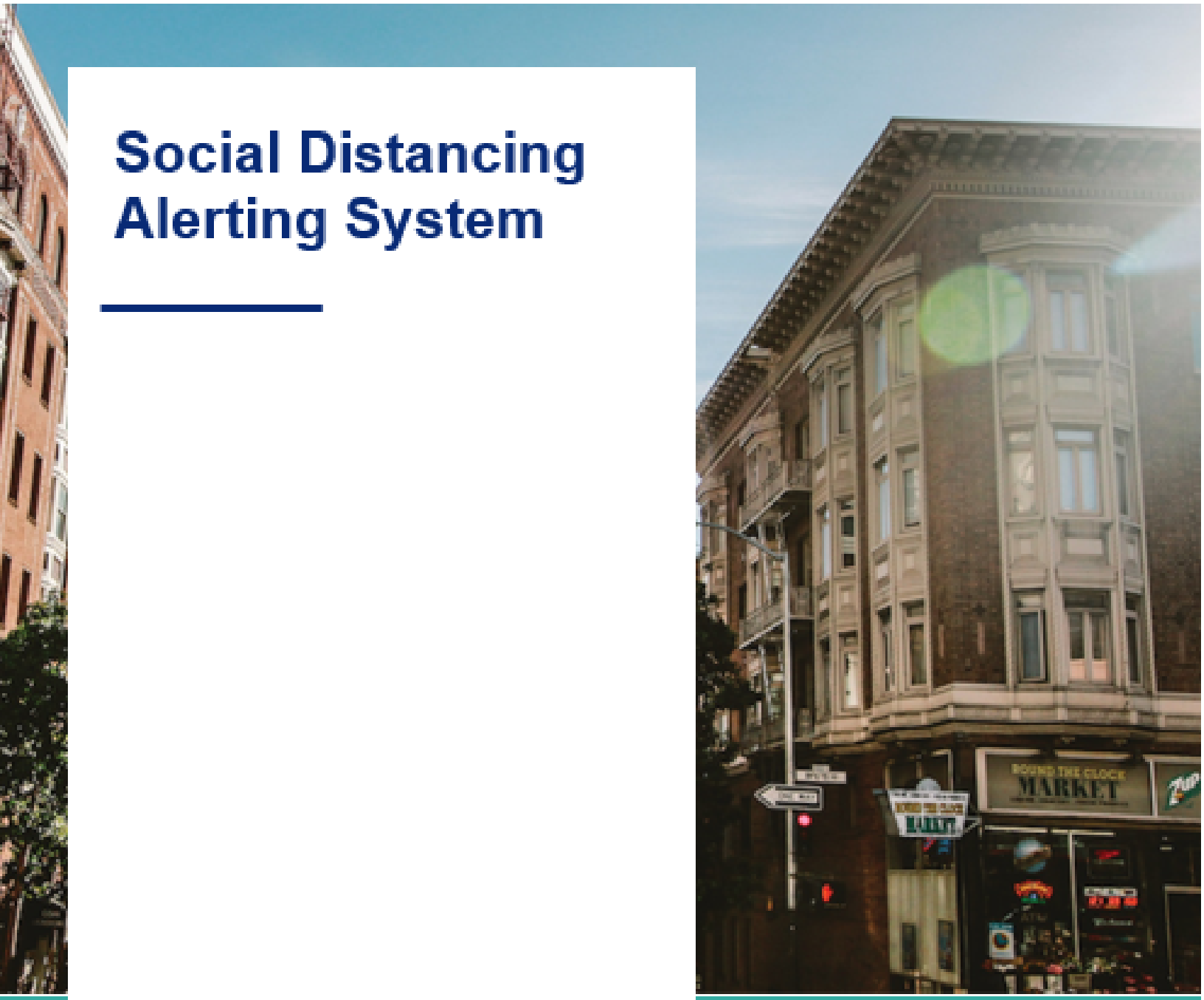
Social Distancing Alerting System



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Smart Internz
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SOCIAL DISTANCING ALERTING SYSTEM

Introduction

One way of limiting the spread of an infectious disease, for instance, Covid-19, is to practice social distancing. This is not a new concept, as most societies have been aware of the value of keeping away from people who are suffering from an infection for many generations.

The objective is to reduce transmission, delaying the epidemic peak, reducing the size of the epidemic peak, and spreading cases over a longer time to relieve pressure on the healthcare system using our project.

Overview

The term social-distancing (S-D) is a way to stop or slow the spreading of contagious disease. In other words, it means less physical communication between two or more persons. In S-D the gap between two living beings (normally human) is 6 feet (two meters). In this short note, we propose a online monitoring based alerting system that alerts the user when he or she crosses the threshold S-D limit. This equipment will help people to maintain safe distance among themselves that ultimately help avoidance of spreading coronavirus. This model is the integration of the camera's and an alarming mechanism. This prototype has been tested on a sample live video for validation purposes.

Purpose

One of the main and most effective measures to contain the recent viral outbreak is the maintenance of the so-called Social Distancing (SD). To comply with this constraint, governments are adopting restrictions over the minimum inter-personal distance between people. Given this actual scenario, it is crucial to massively measure the compliance to such physical constraint in our life, in order to figure out the reasons of the possible breaks of such distance limitations, and understand if this implies a potential threat.

So for this problem, we introduce the “Social Distancing alerting system project”, defined as the automatic estimation of the inter-personal distance from an image or video, and the characterization of related people aggregations. This is pivotal for a non-invasive analysis to whether people comply with the SD restriction, and to provide statistics about the level of safety of specific areas whenever this constraint is violated. We first point out that measuring SD is not only a geometrical problem, but it also implies a deeper understanding of the social behavior in the scene. The aim is to truly detect potentially dangerous situations while avoiding false alarms all of this by complying with current privacy policies We conclude with future challenges related to the effectiveness of SD systems, ethical implications and future application scenarios.

Result

So we have tested our project using sample video we have got our results accurately .

Screenshots of results

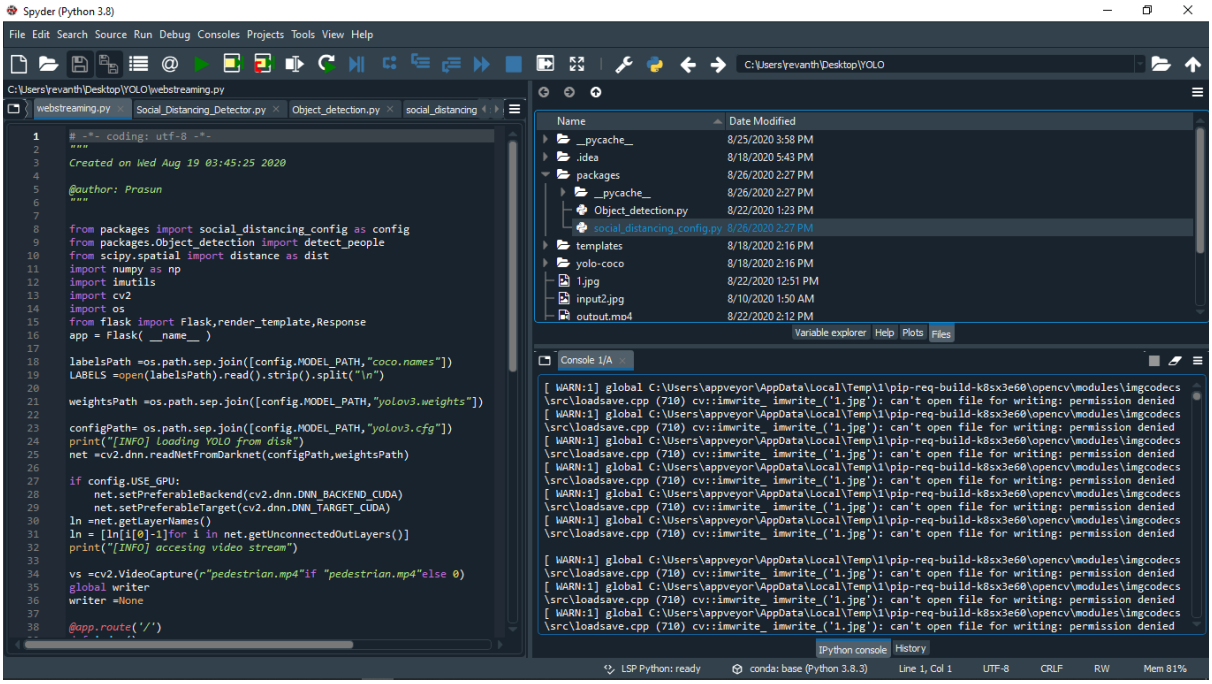

image of code executing


Social Distancing Violations: 32


Social Distancing Violations: 28

Applications

- Office buildings, Schools,Public libraries, Hospitals.
- Warehouses, Manufacturing areas,Religious places.
- Airports, Railway and Metro stations, Entries and exits.
- Shopping areas, food courts and restaurants and Retail shops.

Conclusion

The article proposes an efficient real-time deep learning based framework to automate the process of monitoring the social distancing via object detection and tracking approaches, where each individual is identified in the real-time with the help of bounding boxes. The generated bounding boxes aid in identifying the clusters or groups of people satisfying the closeness property computed with the help of pairwise vectorized eucliden distance formula. The number of violations are confirmed by computing the number of groups formed. The extensive trials were conducted with popular state-of-the-art object detection models: Faster RCNN, SSD,flask and YOLO, where YOLO illustrated the efficient performance with balanced score. Since this approach is highly sensitive to the spatial location of the camera, the same approach can be fine tuned to better adjust with the corresponding field of view.

Future scope

Since this application is intended to be used in any working environment; accuracy and precision are highly desired to serve the purpose. Higher number of false positive may raise discomfort and panic situation among people being observed. There may also be genuinely raised concerns about privacy and individual rights which can be addressed with some additional measures such as prior consents for such working environments, hiding a persons identity in general, and maintaining transparency about its fair uses within limited stakeholders.

THANK YOU