Code Challenge

Problem:

A medical research team wants to detect when a group of people are too close to each other in order to reduce the chances of spreading infectious diseases. They requested an AI Team to develop an app that alerts when two or more people are close, based on a distance threshold in meters.

Target:

Develop a command-Line application that receives a video as input. It should detect the people and then define if (based on configurable distance) they are at risk of infection, and generate a video showing the results.

Notes:

- The input and the output video should be located in the host machine.
- You do not need to train an object detection model. Please use any model from the tensorflow model zoo or the model zoo of your preferred framework.
- Find a way to measure distances in meters from pixel distances. See: https://learnopencv.com/homography-examples-using-opencv-python-c/
- Feel free to determine what 1 meter means in the image. Try to be as accurate as possible with the guess.
- The output video will be the same video as the input video but it will contain green boxes around persons who meet the social distancing rules and red boxes around those who don't.
- Process every frame of the input video, keep the frame rate.
- Contact juan.morales@seon.com or franklin.martinezm@perficient.com if you have any questions about the challenge.
- We will send you the input video mp4 file.

Requirements:

- Programming language: Python
- The app should run in docker.
- The file names of input/output should be configurable
- The distance should be configurable.
- Show a summary of the input video features such as frame rate, duration, etc.
- Show a summary of the alarms that were detected.

- Show a summary of your code's performance such as elapsed time, object detection model fps.
- Write down the summary in a summary.txt file.

Input	Output
• Input video filename • Output video filename • Distance threshold in meters	• Video File (mp4)

Sample:

Input Frame Sample

Output Frame Sample