SIT 789

Pass Task 4.2: Object detection

1.1 Face detection from still images

1. As we increase the scale factor from 1.1 – 1.5 the computation time decreases, and the accuracy of the face detection goes down.

2. As we increase min neighbours from 0 – 20 the number of detected faces decrease, and the number of false face detections also go down.

3. As we vary the min size, faces of different sizes (depending upon the requirement) can be detected.

Fig 1.1.1: Example of face detected because of min size parameter.

4. Skipping flags has no effect on the given set of images.

5. The best set of params are scale factor = 1.1, minNeighbors = 10, minSize = 30. We can see that the faces can be detected in img_1014.jpg using the best parameter but in img_1123.jpg only 1 face is detected, the other two are not detected because of side profile which hides important facial features such as eyes.

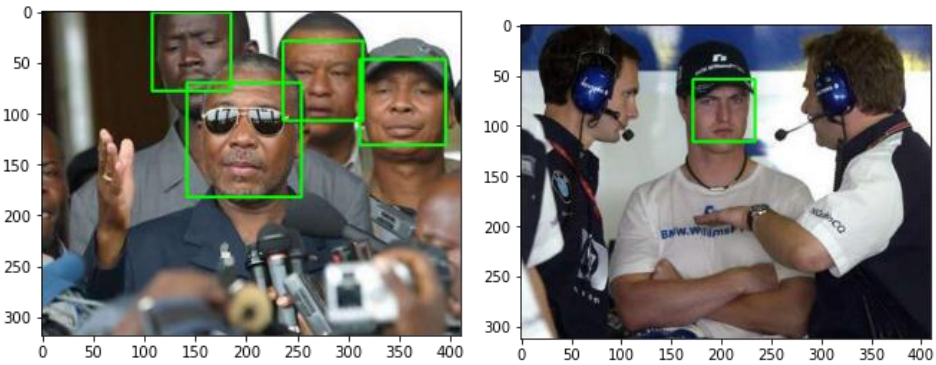

Fig 1.1.2 img_1014.jpg img_1123.jpg

1.2 Face detection from video

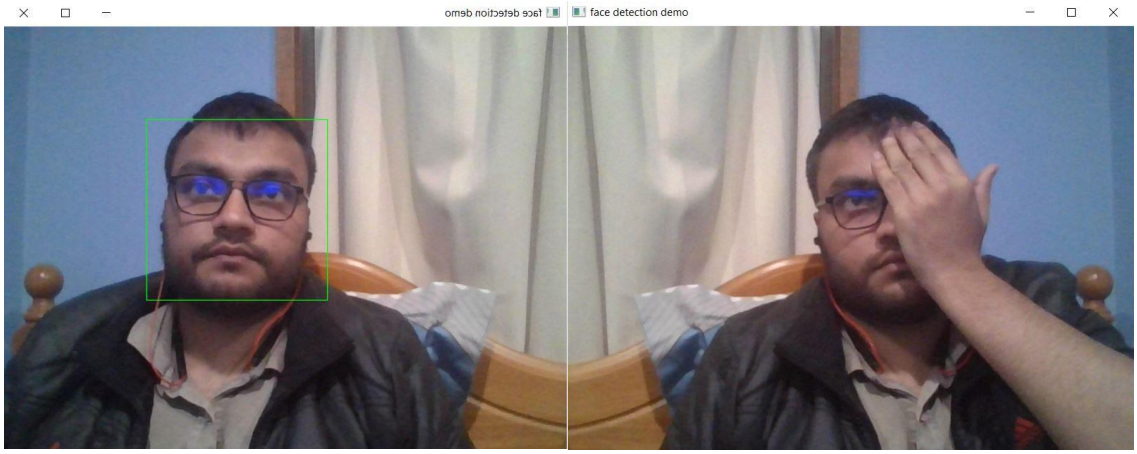

Fig 1.2: Face detected (left). Face not detected due to occlusion (right).

2. Pedestrian Detection

1. When we comment out the nmsboxes then there are too many overlapping detection results.

Fig 2.1.1: Shows the effect of lack of NMS.

2. As we increase the win stride the detection results become less accurate, and the computation time decreases. This is because several areas of image are not traversed in sliding window step.

3. As we increase the padding, the inference time increases and detection accuracy increases.

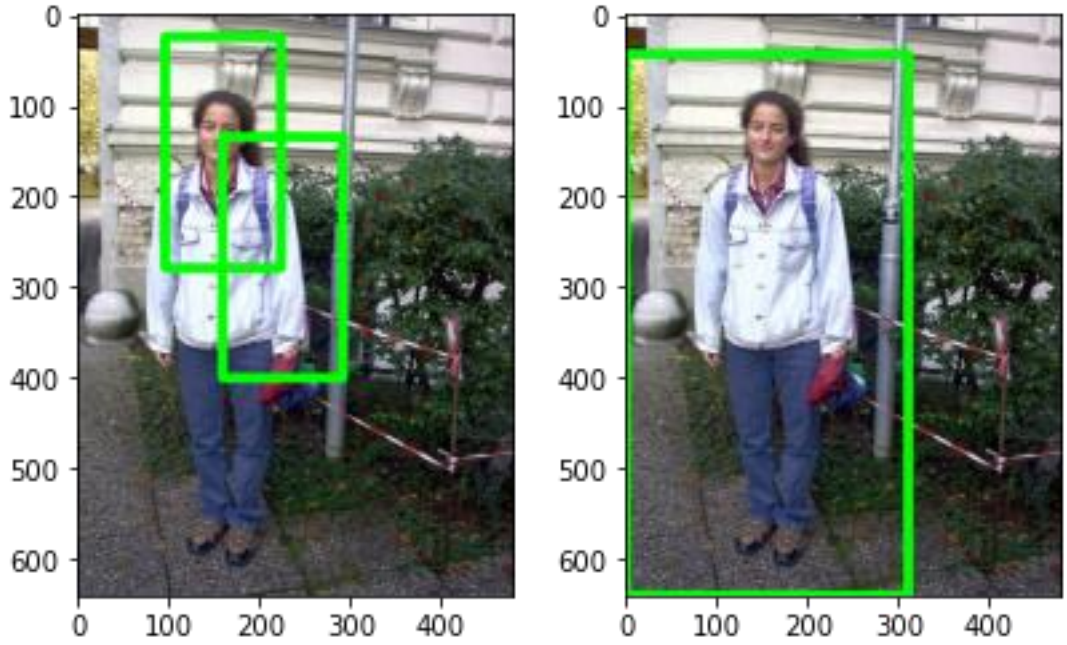

Fig 2.1.2: Shows the effect padding. Left (4,4) and Right (6,6)

4. As we increase the scale factor the computation time decreases and the detection accuracy also decreases.

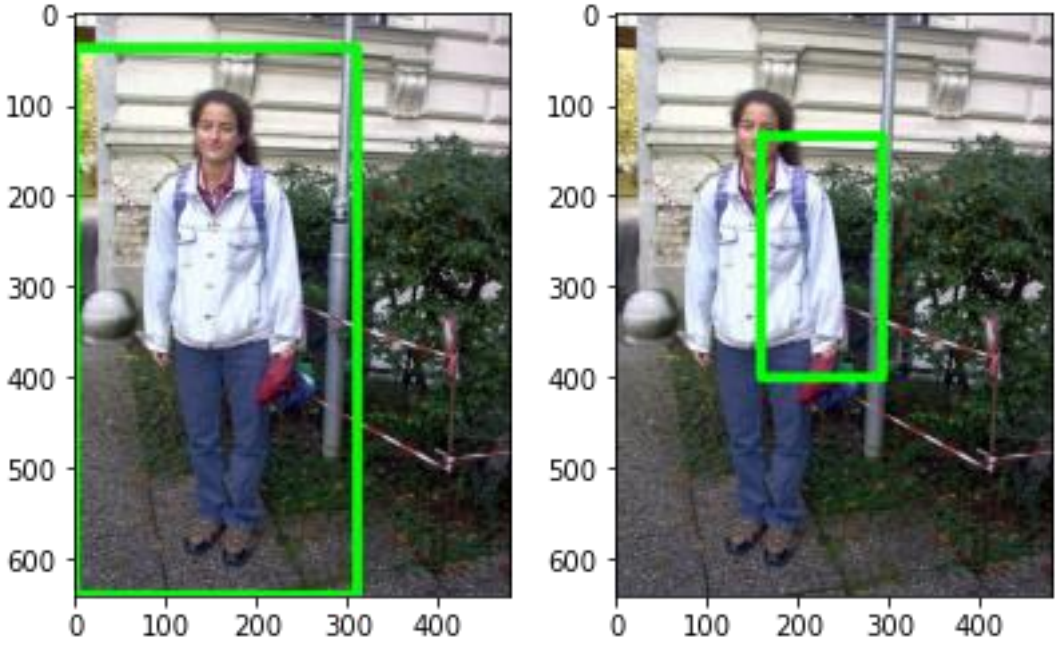

Fig 2.1.2: Shows the effect scale factor. Left (1.4) and Right (1.2)