Computer Vision
Spring 2021
Problem Set #5

Martin Mathew
martin.mathew.2k11@gatech.edu

4a: PF Occlusions

ps5-4-a-1

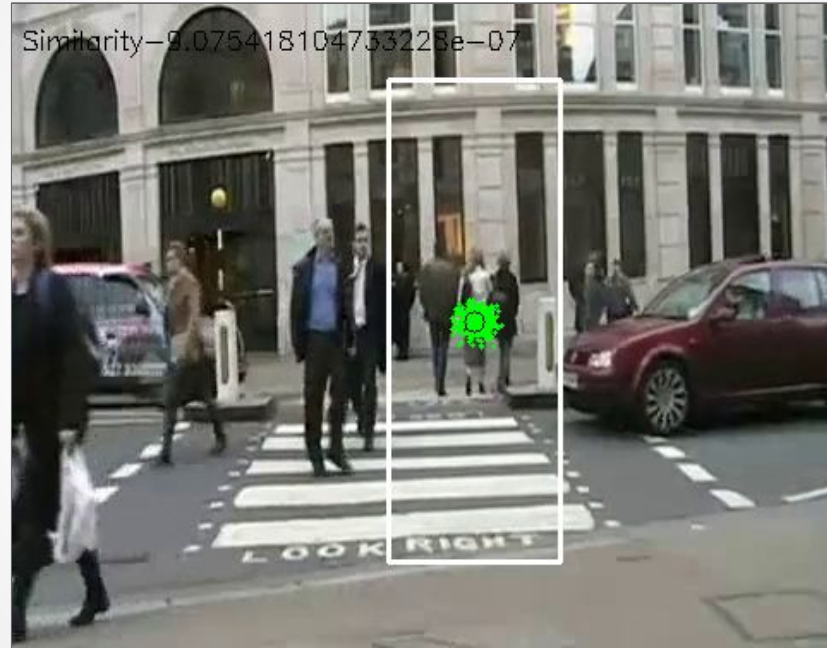# 4a: PF Occlusions (cont.)

ps5-4-a-2

4a: PF Occlusions (cont.)

ps5-4-a-3

4a: PF Occlusions (cont.)

ps5-4-a-4

4: Text response

Describe what you did. How did you modify the Particle Filter class to continue tracking after occlusions?

I used a motion model which along with x, y dimension uses scale and velocity dimensions
These dimensions are updated as per the following equation

$X = X+vx + noise$
$Y = Y + Vy + noise$
$Vx = newx - oldx + noise$
$Vy = newy - oldy + noise$
 $Scale = scale*(noise(0.995, 1000)/1000$

Scale parameter is used to handle template size since subject is moving away from camera and the size is reducing

To handle occlusion whenever the minimum error metric is above a threshold I assume there has been occlusion and i avoid resampling the particle and continue using the particles and weight from previous iteration to track the subject

5: Tracking multiple targets
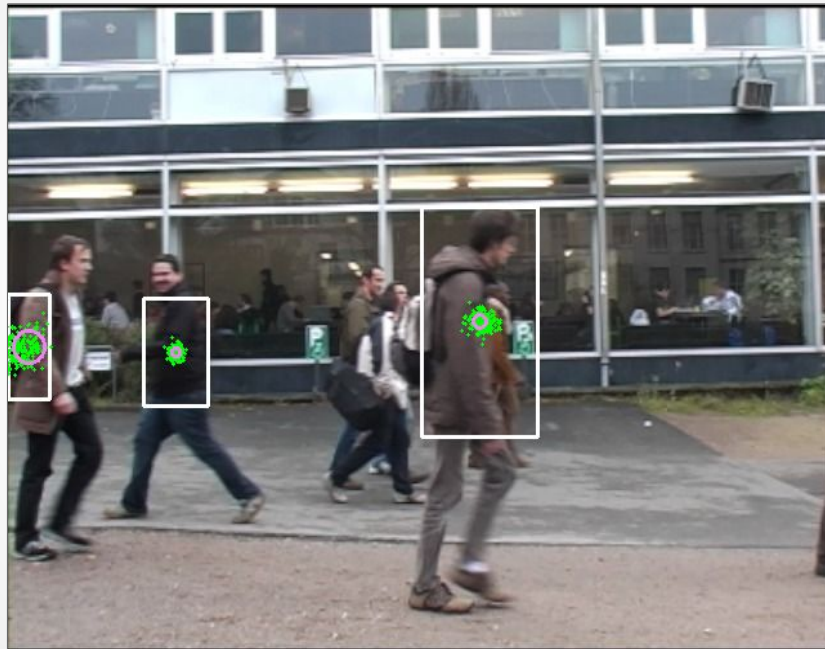
ps5-5-a-1

5: Tracking multiple targets (cont.)

ps5-5-a-2

5: Tracking multiple targets (cont.)

ps5-5-a-3

5: Text response

I used particle filter because i was able to handle occlusion better with particle filter . To handle multiple subjects i had to create multiple particle filters with their own corresponding parameter and also reducing template size to just include the target's jacket gave better results because the jackets were a better identifying feature for tha targets

6: Challenge Problem

ps5-6-a-1

6: Challenge Problem (cont.)

ps5-6-a-2

6: Challenge Problem (cont.)

ps5-6-a-3

6: Challenge Problem Text response

Describe what you did. Did this task present any additional challenges compared to the previous sections? Include details about any modifications you had to apply.

I think
my answer is ...