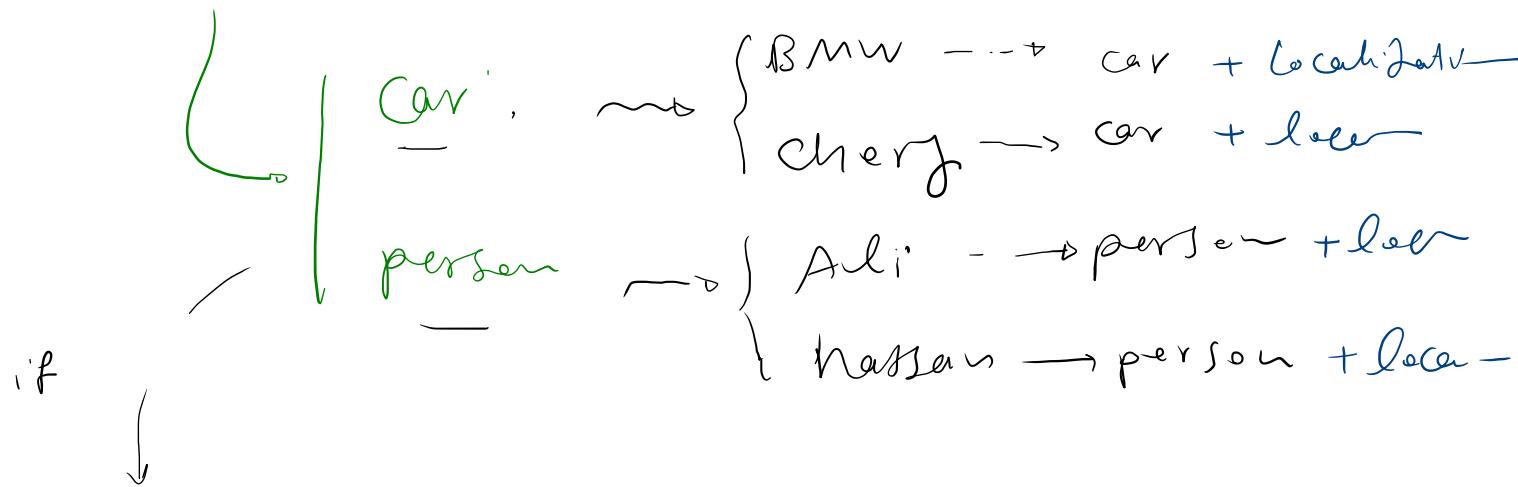


Object

Tracking!

## object detection



ODX

BMW / white / lp: 321-33  $\frac{051}{44}$  mod OT

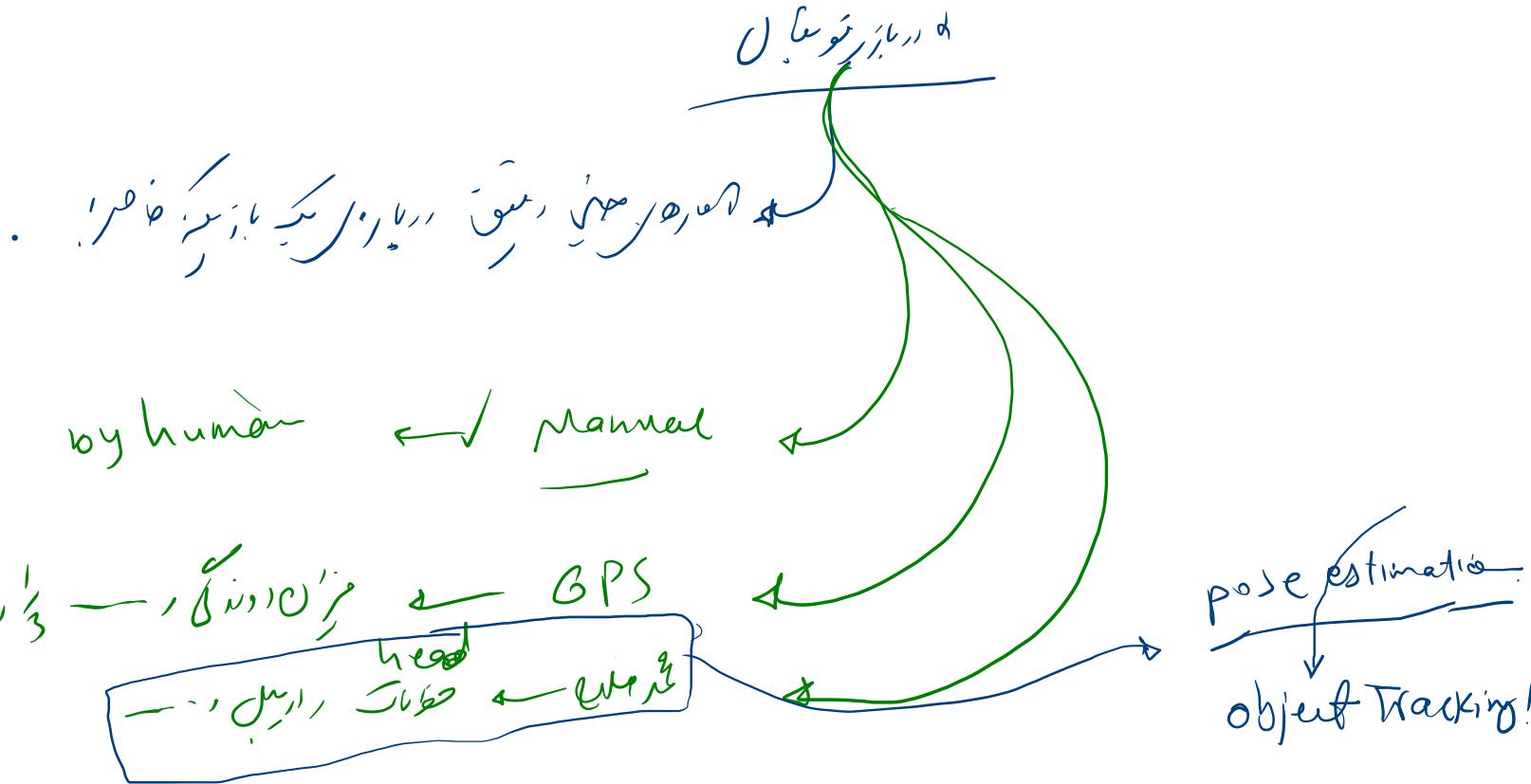
OT

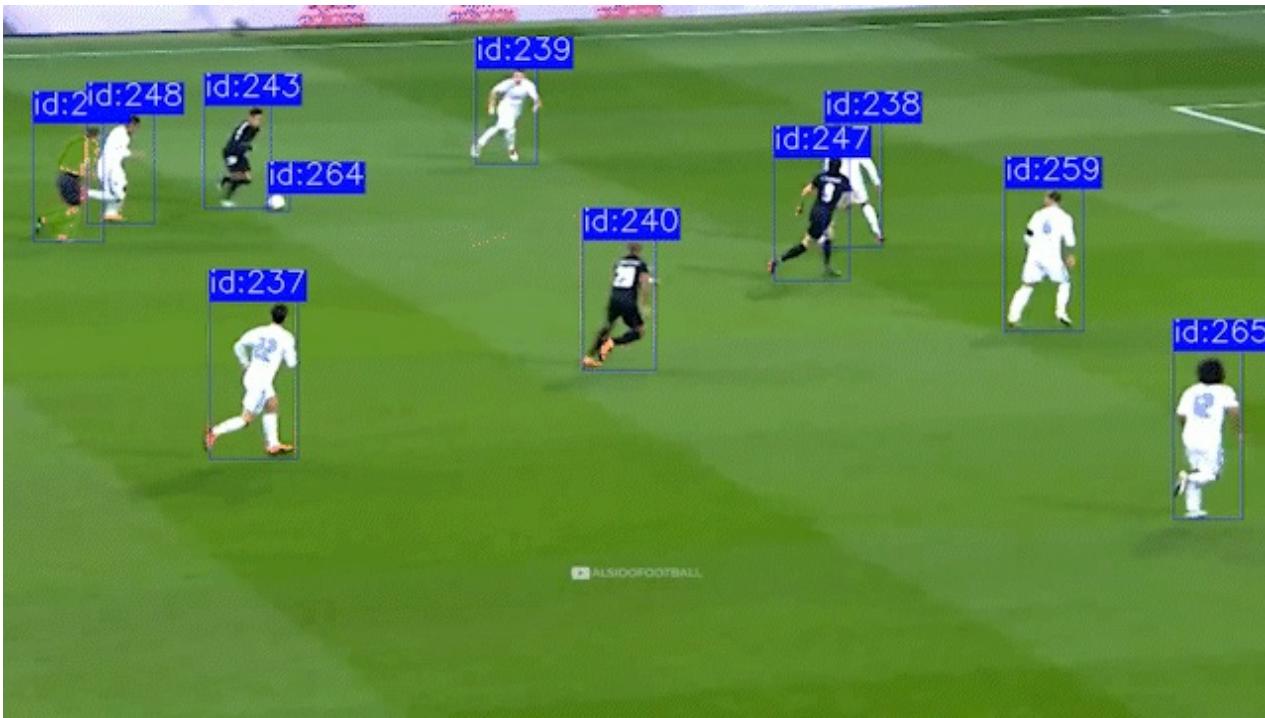
← مفهوم التacking

OT

← مفهوم التacking  
+  
\_\_\_\_\_

Object Tracking!

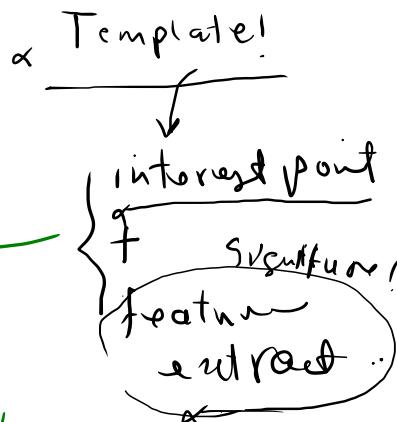




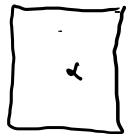
# classical object Tracking

SIFT

Kalman filter

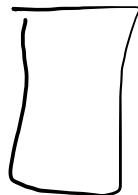


Template



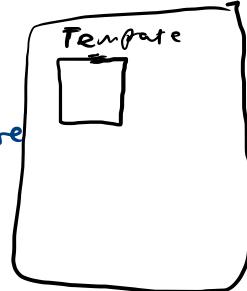
→ Feature extraction

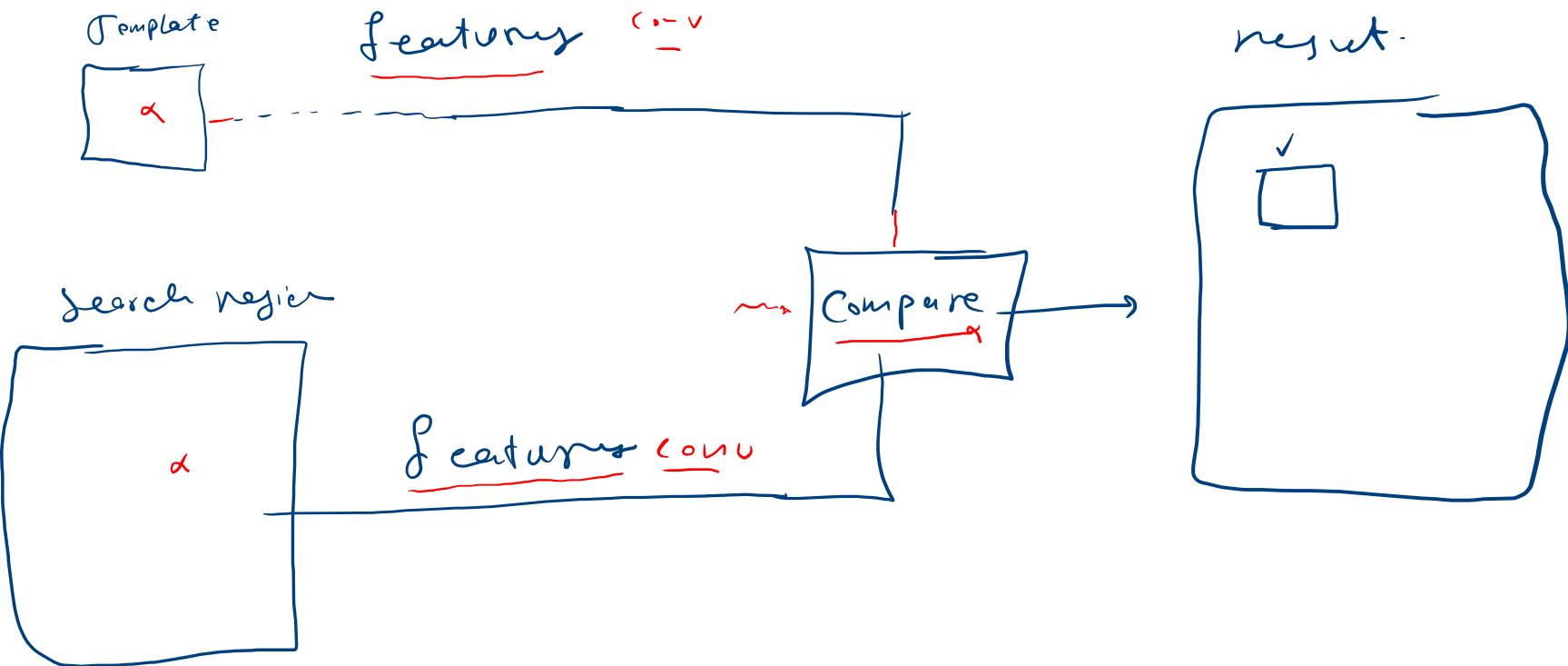
Image (Search region)

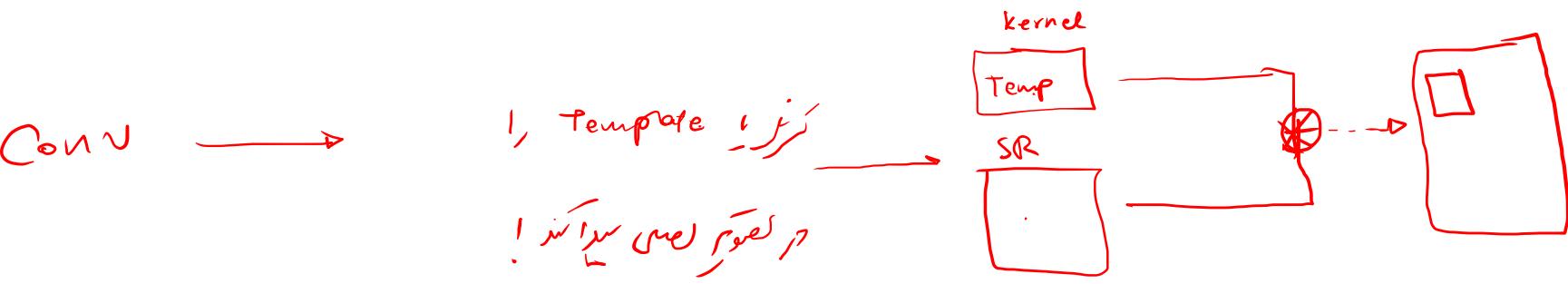


→ Feature extraction

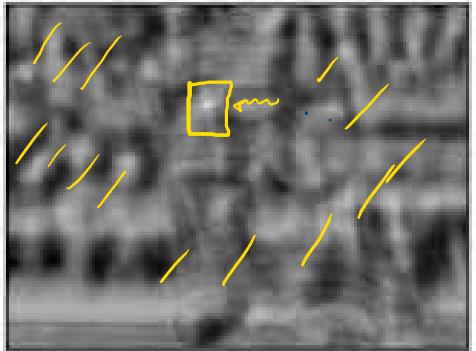
Compare







Matching Result



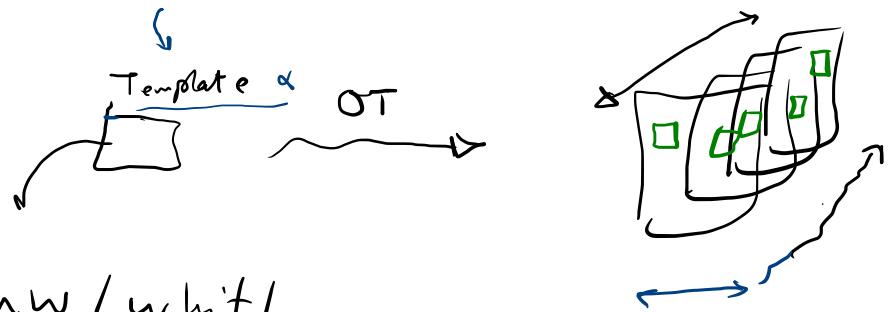
Detected Point



# Template Matching with OpenCV

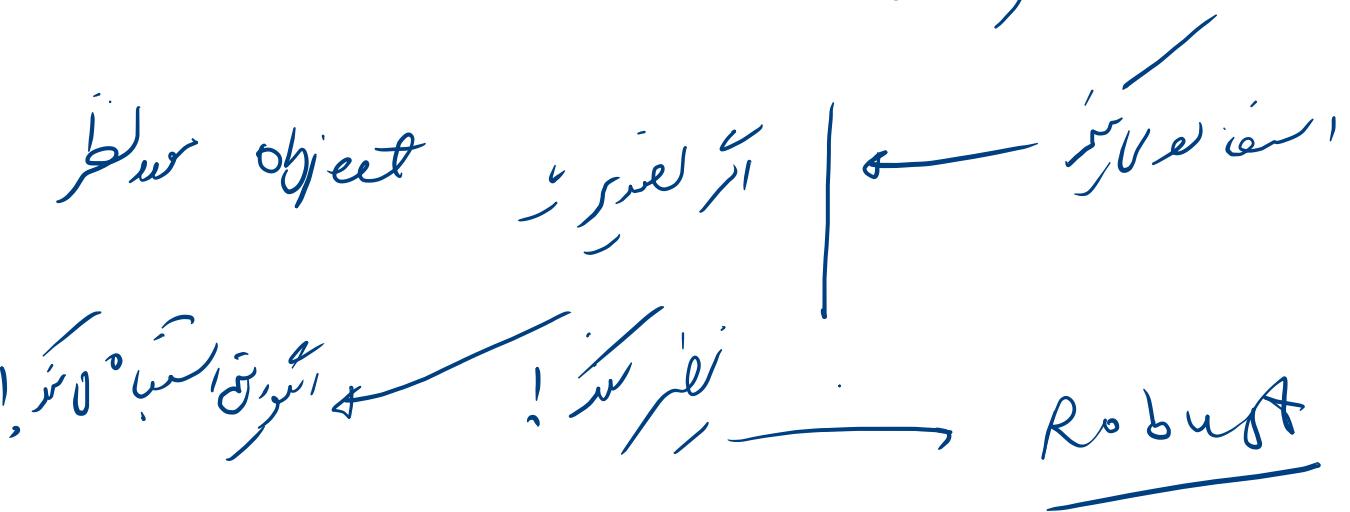


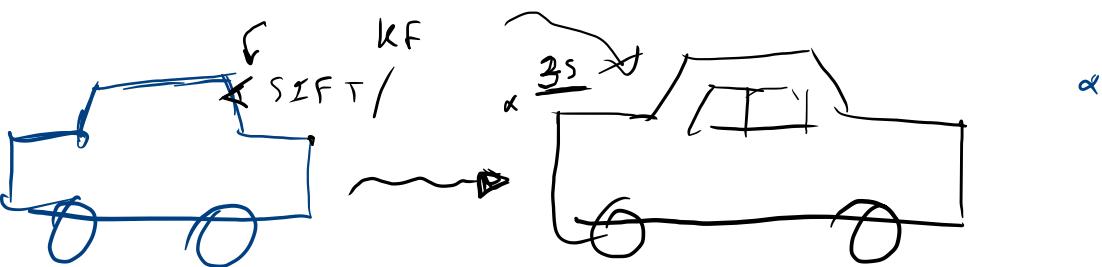
BMW / white

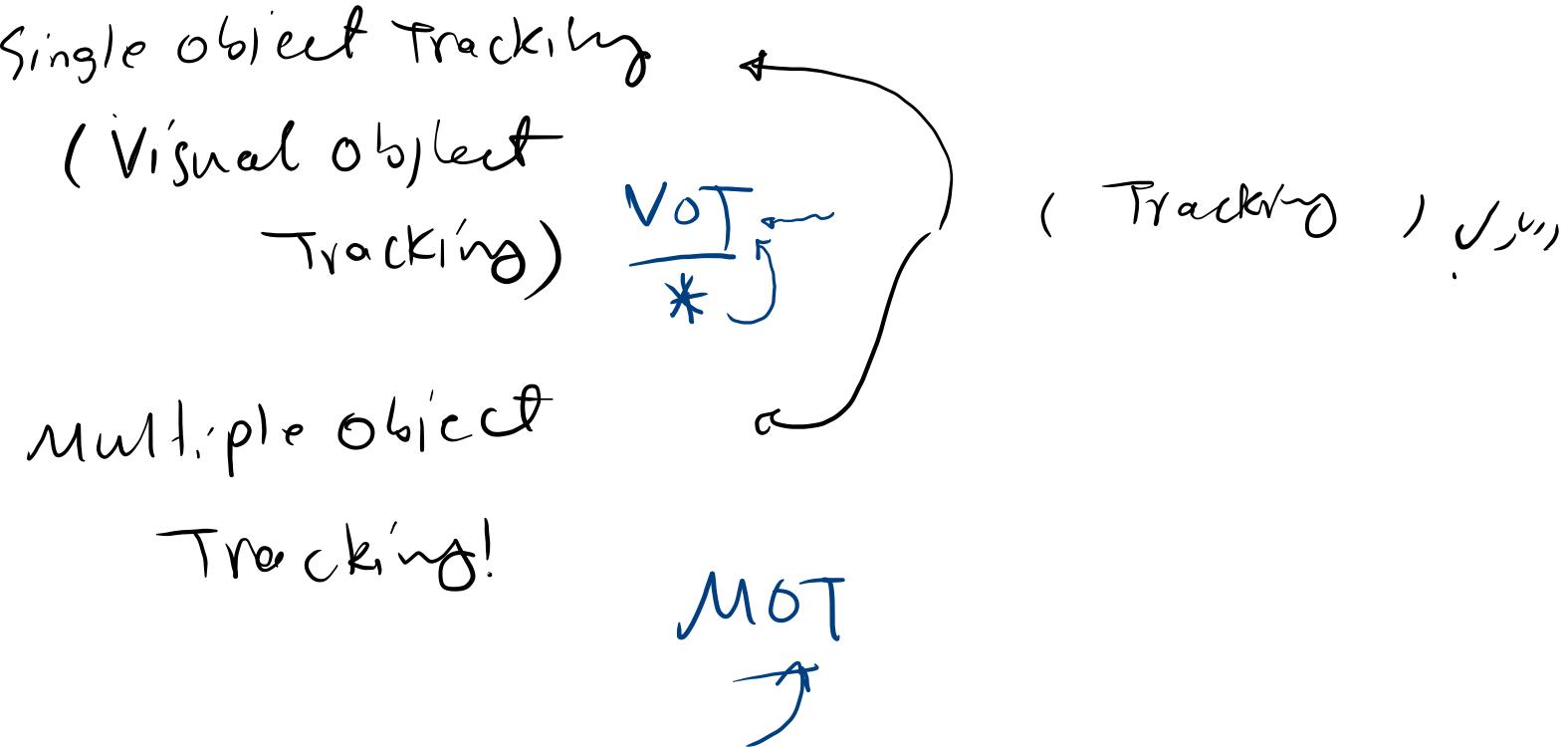


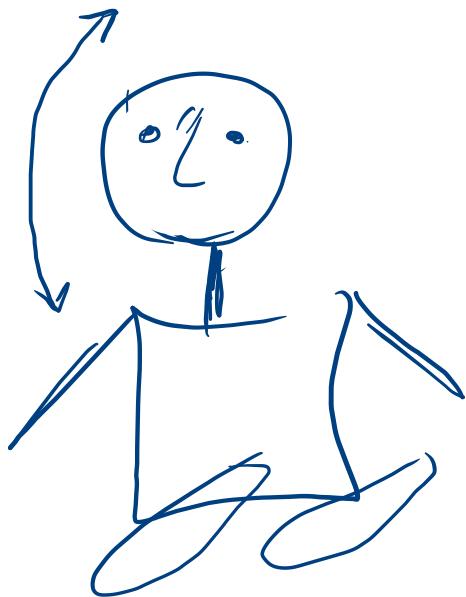
! end Template with "the" ← object / h + → ! pos  
Tracking!

OT in classic (DIP) مُعْتَدِلٌ وَقْتٌ









$\rho_j$

dataset)

→ Data collecting!

classification → object detection → segmentation

label

label + BB

label  
+ pixel!

object tracking  
label + BB / all frames

VOT  
MOT

→ Video  $\rightsquigarrow$  annotated frames!



$\rightsquigarrow$  VOT  
MOT models training!

Tracking!

We try

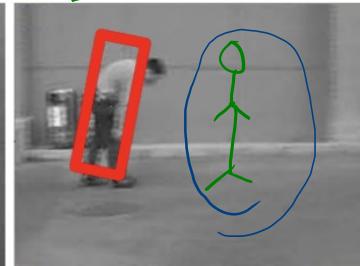
Illumination



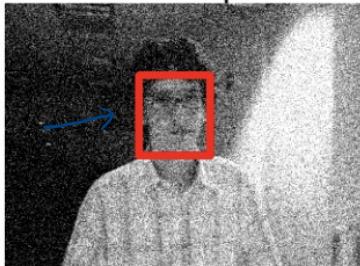
Occlusion



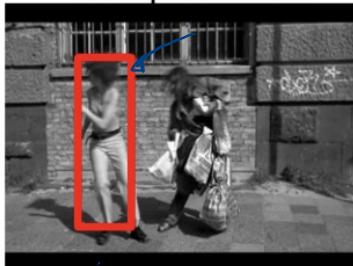
Deformation



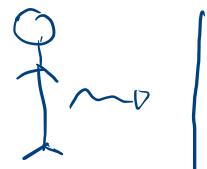
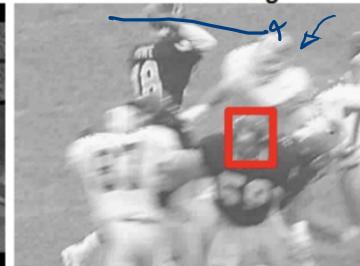
Noise corruption



Out-of-plane rotation

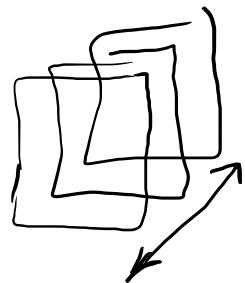
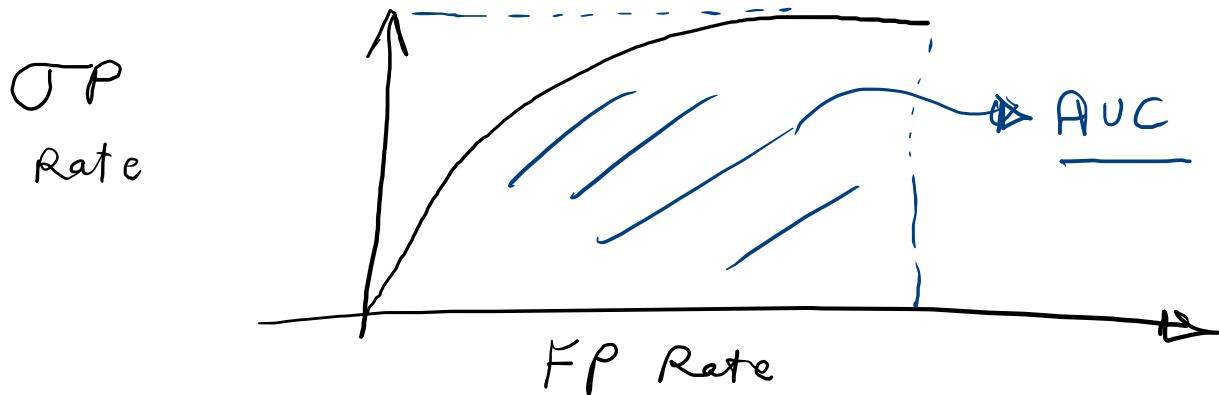


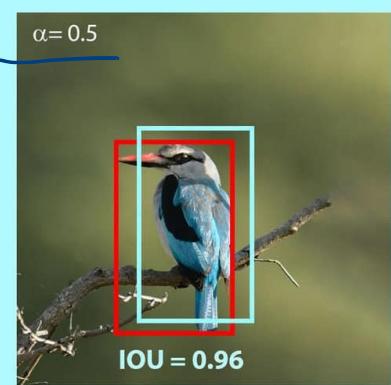
Motion blurring



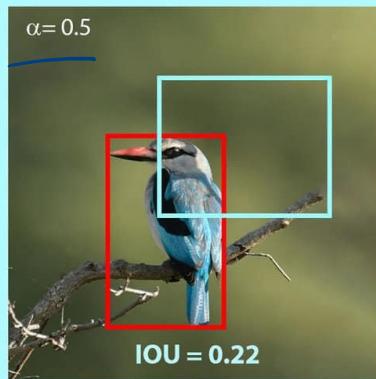
# performance metrics!

OD  $\rightsquigarrow$  AUC : Area under curve!

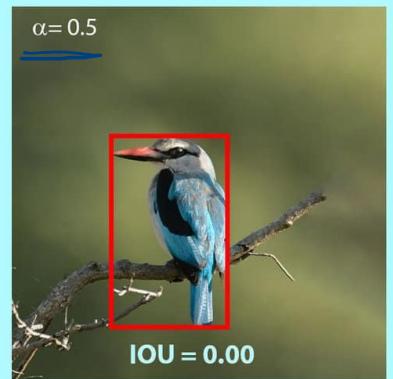




True Positive



False Positive

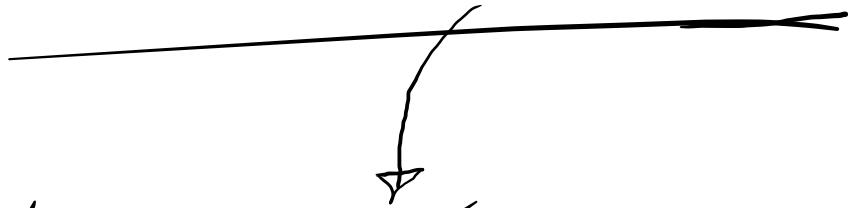


False Negative

positive و predict BB میں کوئی کوئی object نہیں رکھا جائے تو  
مقدار خرچ کو کم کر دیا جائے

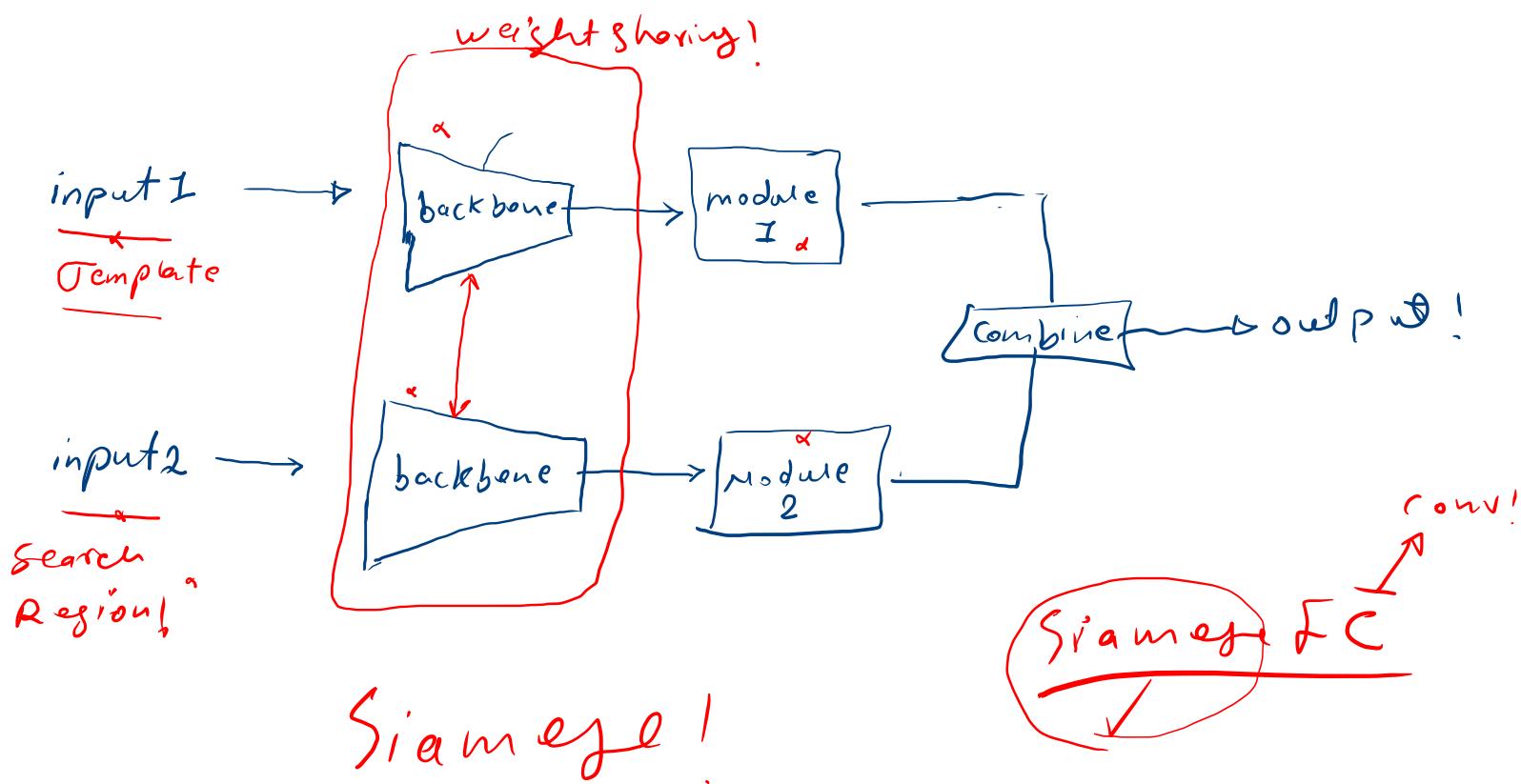
Ground Truth → True ←  $\text{IOU} > \text{Threshold}$  5  
False ←  $\text{IOU} < \text{Threshold}$

~~! niet vol tekeningen, dus x~~



Siamese!

~~Siamese, maar misschien?~~

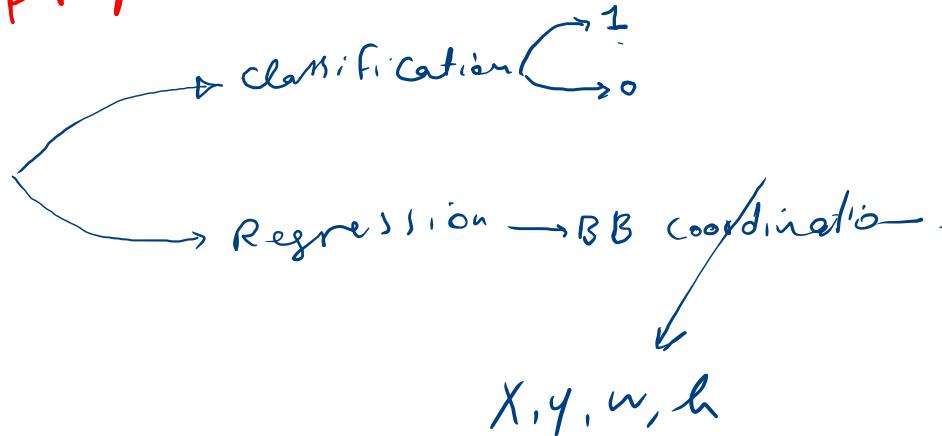
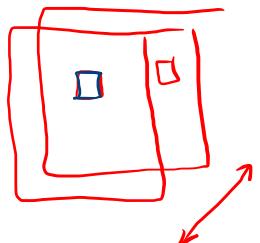


Siamese!

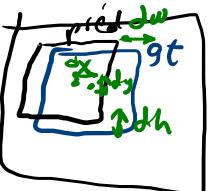
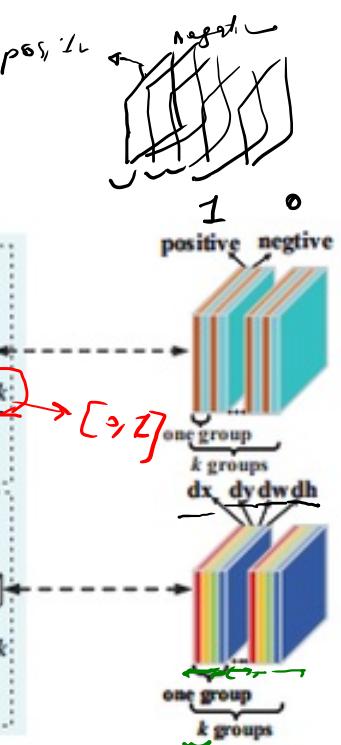
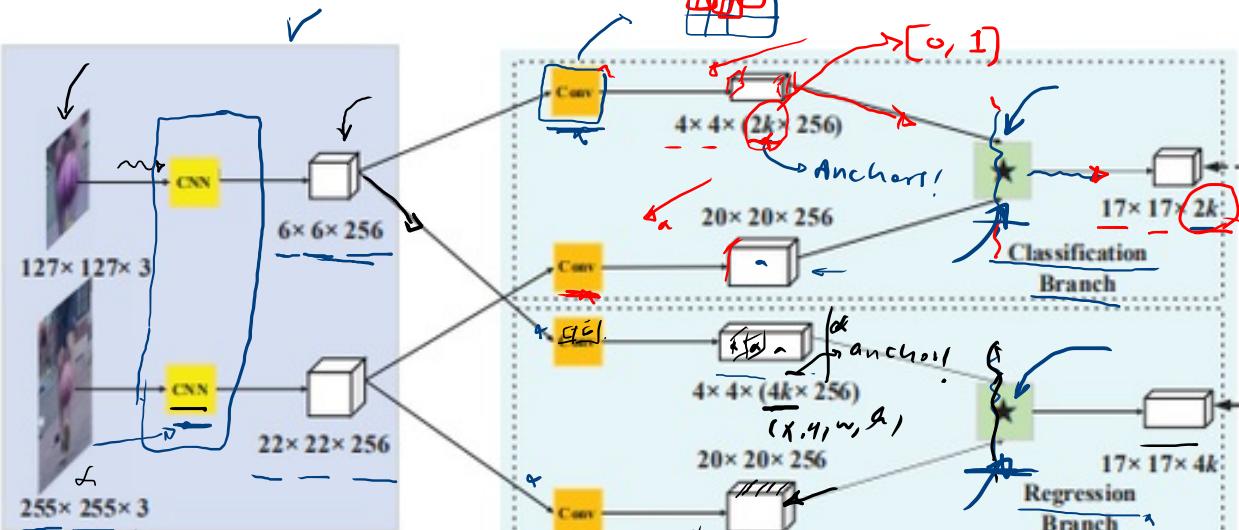
Siam RPN

Region proposal network!

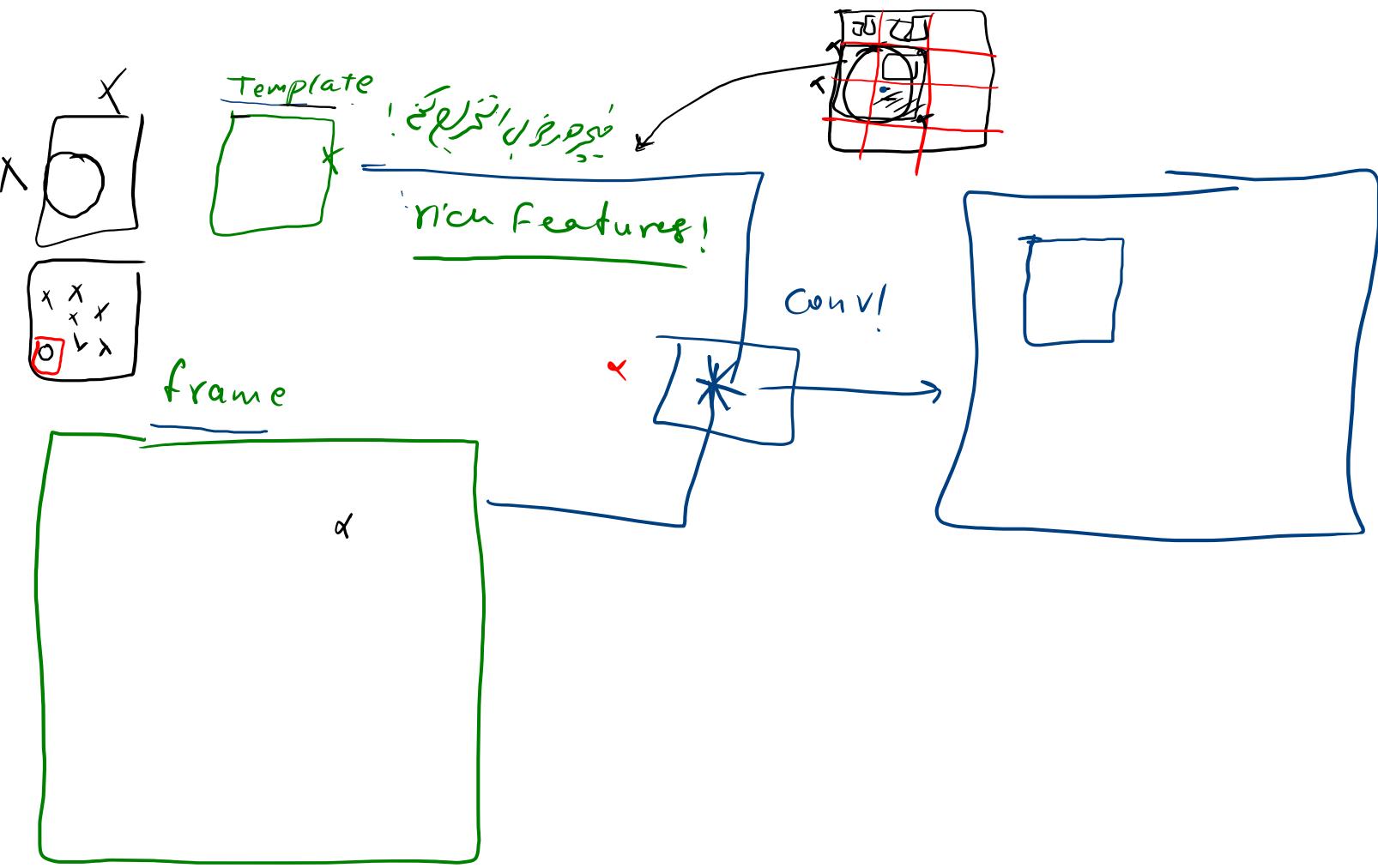
IoT  
OD / Frame



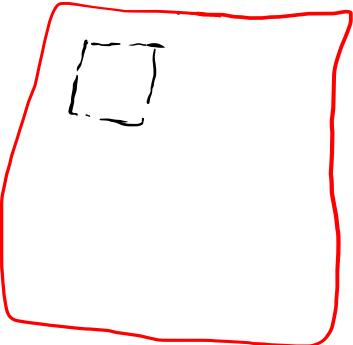
# SiamRPN / VOT / SOT



RPN

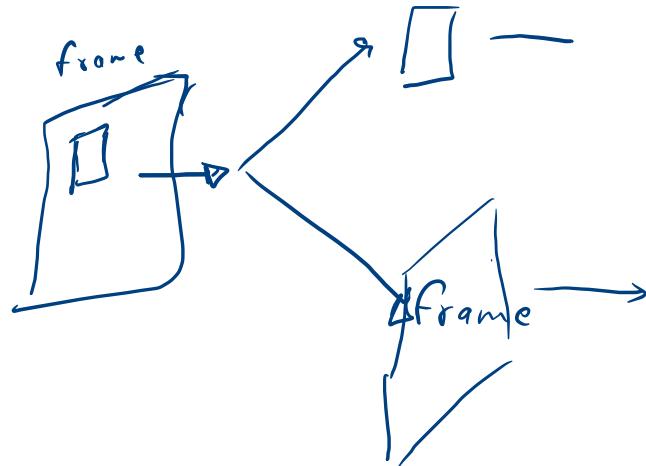


Frame



~~annotation.txt~~

$x, y, w, h$



The End "