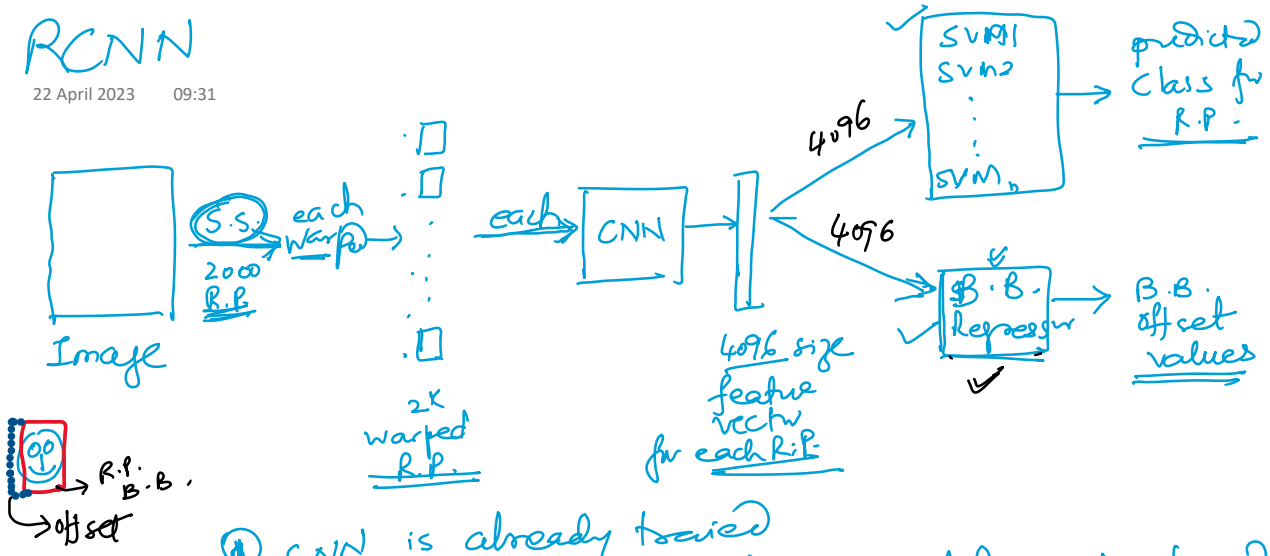
RCNN

22 April 2023 09:31



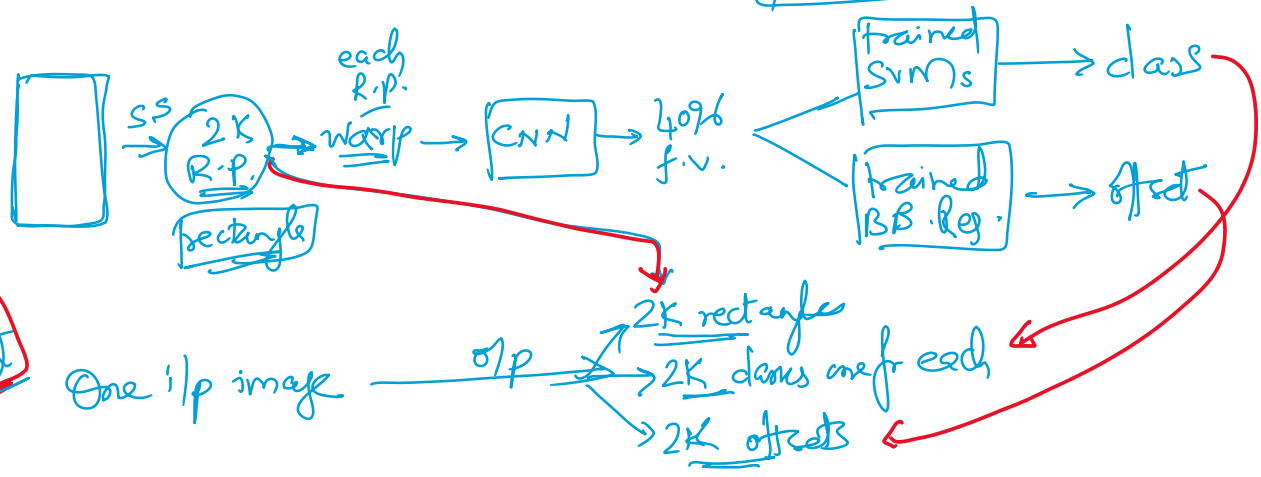
Training:

1. CNN is already trained
2. Each SVM is trained separately → to classify one object binary
3. B.B Regressor → Provide i/p ↔ image R.P. (X) 4096 vect
   * offset (Y)

Prediction: You have:

1. Trained CNN
2. Trained SVMs
3. Trained BB Regressor

→ Given an i/p R.P.
o/p will be: CNN: 4096 vect
i/p for SVM: 4096 → o/p class
i/p for BB Reg.: 4096 → o/p offset



Net net

Next step: ~~For each~~ from detected region + offset + class

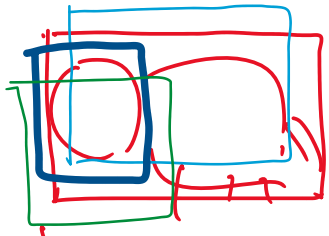
1. Throw away unknown classes ←
2. One actual object may have multiple overlapping regions
   ↳ Use **NMS** → non max suppression to select only one region as the detected object

object

- (a) IOU for finding regions of the same object
- (b) From regions of the same object select the one with highest probability returned by SVM

NMS

22 April 2023 09:49



R.P. for a detected object dog

one R.P.

→ CNN → 4096 → SVMs → dog

→ B.B.R. → offset

We will have more than one R.P. for the same "dog" object

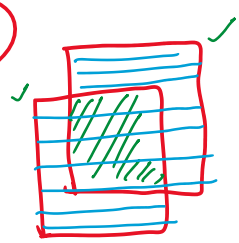
① each such R.P. will have a probability (SVM o/p)

② " " " " " : Bounding Box (original S.S.B.S. + offset from BBR)

NMS ... uses IOU (Intersection over union)

non max suppression

if IOU > 0.5, the 2 regions refer to the same object.



IOU ≈ 1

IOU = Intersection / Union

2000 → e.g. reject 1000 (discard SVM says no dog)

1000 → for each pairs IOU : if IOU > 0.5, they are the same object

e.g. → 300 refer to object 1

→ 200 " " " 2

→ 150 " " " 3

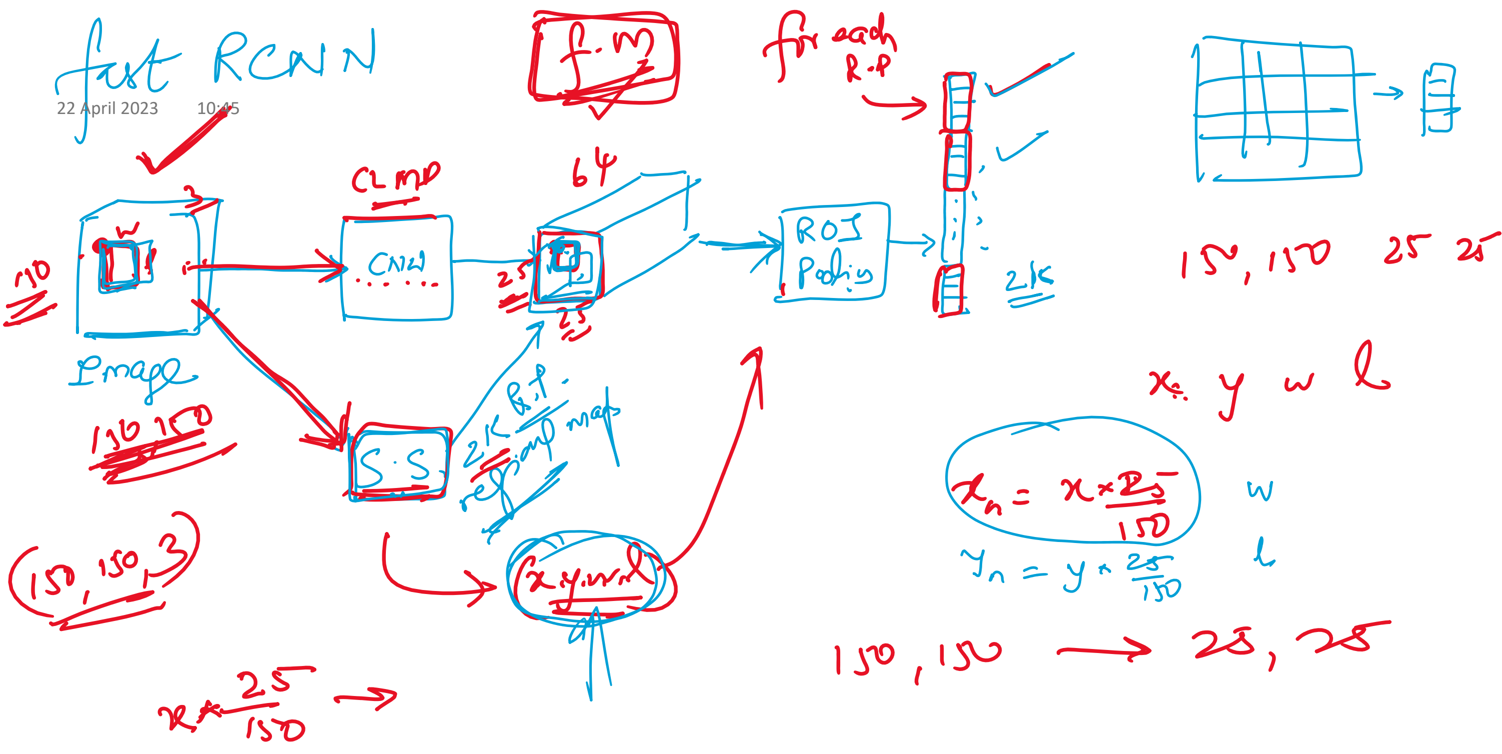
→ 130 " " " 4

→ 100 " " " 5

select the one with highest probability returned by SVM

fast RCNN

22 April 2023 10:45



22 April 2023 11:08