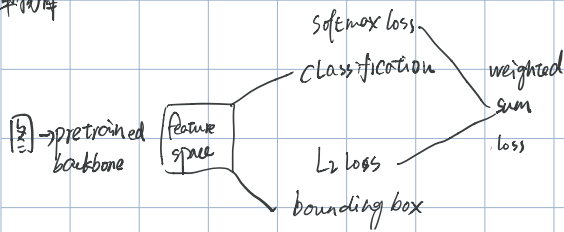


输入: 图片

输出: object 和 bounding box (x, y, w, h) 和 class

单物体




多物体:

① 用 sliding window 找, 计算量巨大

② Region proposal methods?
底告示, 找可能 blob, 约 2000 个

R-CNN

① Region proposal

② 对每个 , conv $\begin{cases} \text{class} \\ \text{bbox} \end{cases}$


慢

Fast R-CNN

① 先 conv

慢

② ROIs from region proposal

③ 对 , conv $\begin{cases} \text{class} \\ \text{bbox} \end{cases}$

bbox 的评价: IOU

(Intersection of union)

bbox 的选择: NMS

非极大值抑制

(选分最高的 bbox, 把跟它重叠 > threshold 的都删掉)

Faster R-CNN

① 先 conv

② RPN (Region Proposal Network)

用不同形状和 Anchor box

$\begin{cases} \text{RPN Classification} \\ \text{RPN Regression} \end{cases}$

③ crop

④ then $\begin{cases} \text{obj Classification} \\ \text{obj Regression} \end{cases}$

detector 的评价: MAP

MAP {
1) 把 score 排
2) if bbox is gt bbox 则 +1, 记 +1
else
-> 画 PR 图
4) 计算 Area => AP
最后平均所有 class 的 AP

ROI 怎么找?

1) ROI Pool. 原图 project 到 feature (固定)

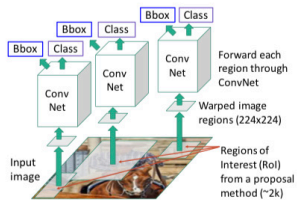
2) ROI Align. 原图 project 到 feature (可变)

SSD single stage object detection

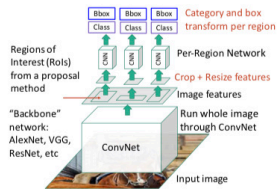
① conv

② 直接 anchor 跟 CNN \rightarrow category, 为啥 RPN??

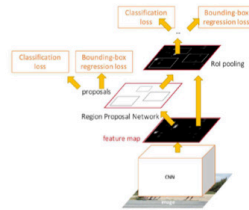
“Slow” R-CNN: Run CNN independently for each region



Fast R-CNN: Apply differentiable cropping to shared image features



Faster R-CNN: Compute proposals with CNN



Single-Stage: Fully convolutional detector

