Object Detection

Region proposals
(Optional)

deeplearning.ai

Region proposal: R-CNN = Regions w/ CNN

→ Sliding window
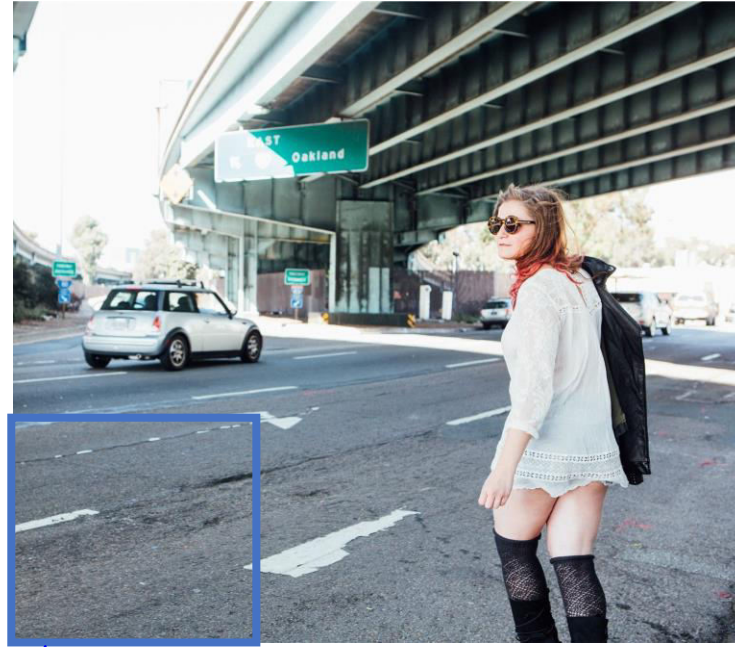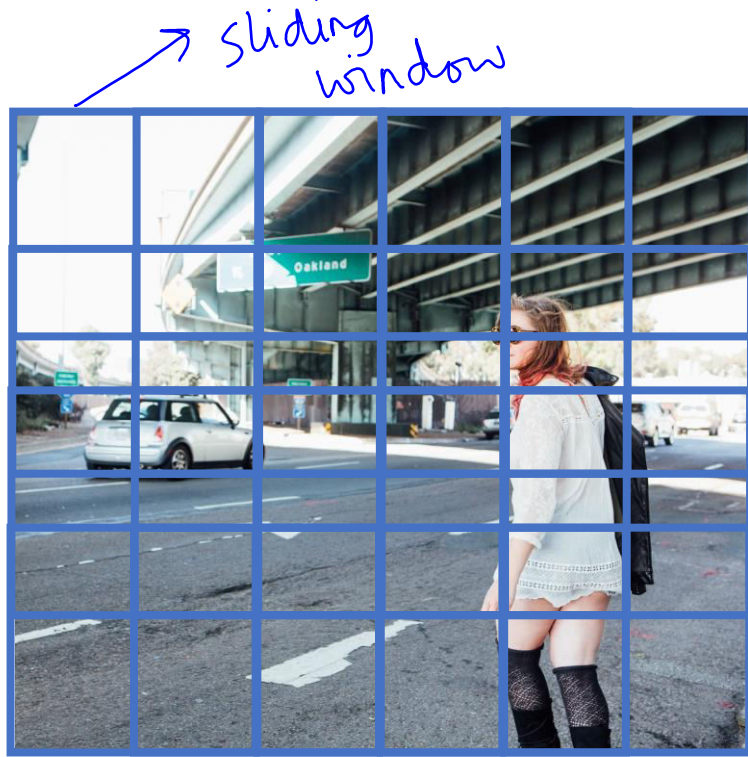
No point Running CNN here, nothing of Interest here

- RCNN - tries to pick regions in which you should run your CNN classifier so that you efficiently use compute that you need
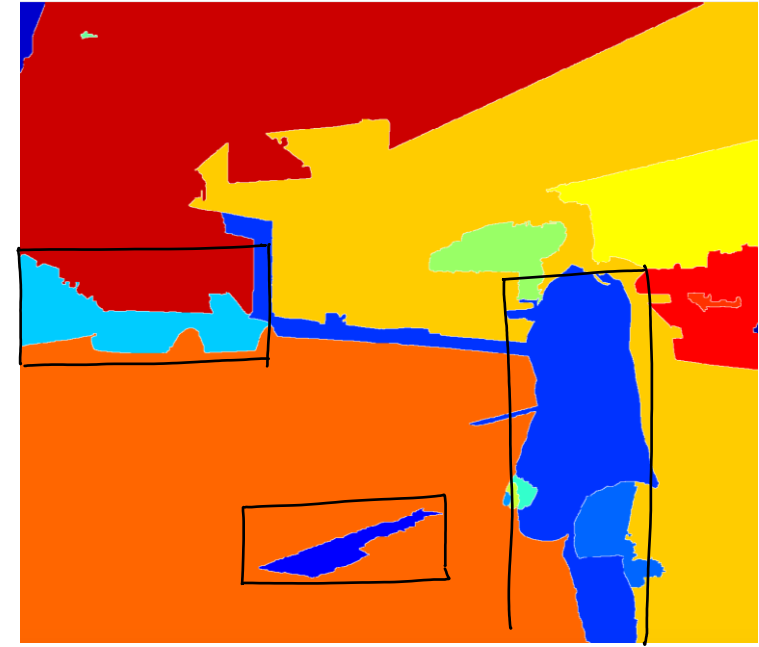
- Segmentation Algo
- Finds blobs on which you can run your CNN
- Blobs are shown in black If we run CNN there, hopefully we find objects of Interest

Bounding Box

[Girshik et. al, 2013, Rich feature hierarchies for accurate object detection and semantic segmentation] Andrew Ng

Faster algorithms

R-CNN:
(slow)

Propose regions. Classify proposed regions one at a time. Output label + bounding box.

Fast R-CNN:
(clustering step of proposing regions is still slow)

Propose regions. Use convolution implementation of sliding windows to classify all the proposed regions.

Faster R-CNN:

Use convolutional network to propose regions.

[Girshik et. al, 2013. Rich feature hierarchies for accurate object detection and semantic segmentation]
[Girshik, 2015. Fast R-CNN]
[Ren et. al, 2016. Faster R-CNN: Towards real-time object detection with region proposal networks]

Andrew Ng