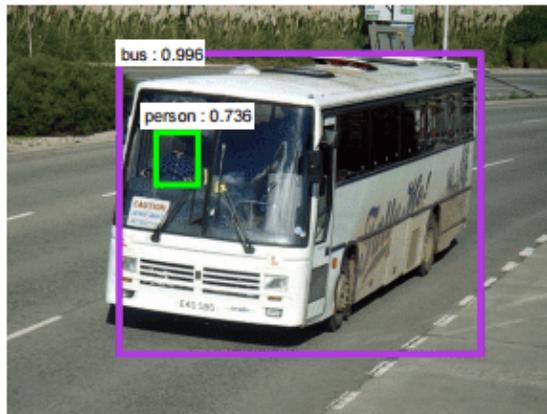
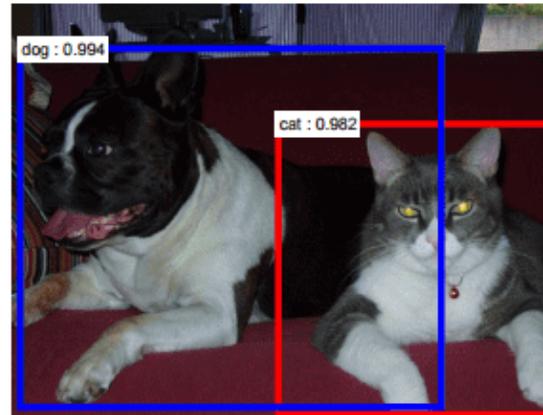
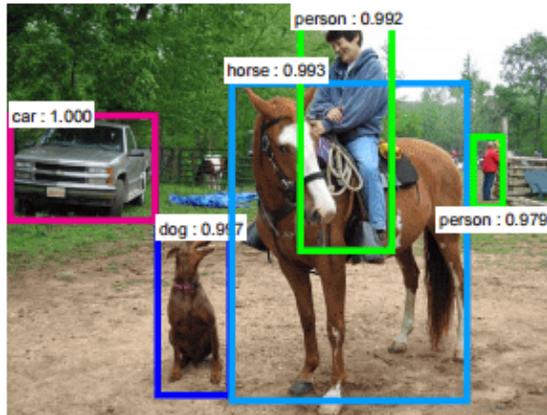


# **Компьютерное зрение**

- детектирование объектов
- семантическая сегментация

# Детектирование объектов

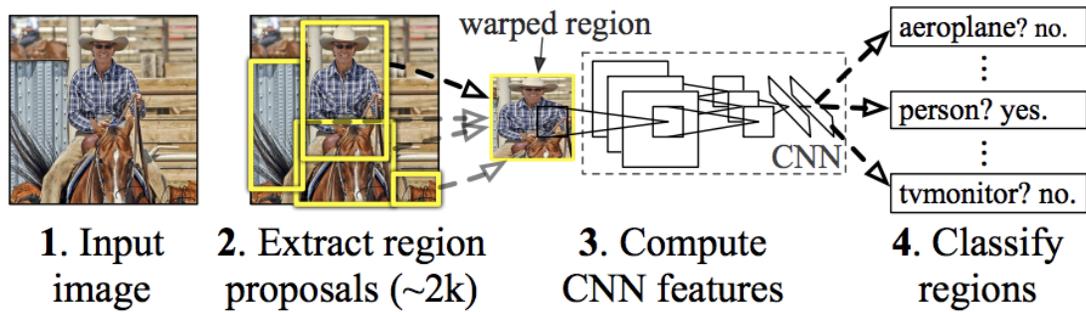


Можно пройтись скользящим окном с CNN.

Нужно очень-очень хорошее качество классификации картинки.

# RCNN

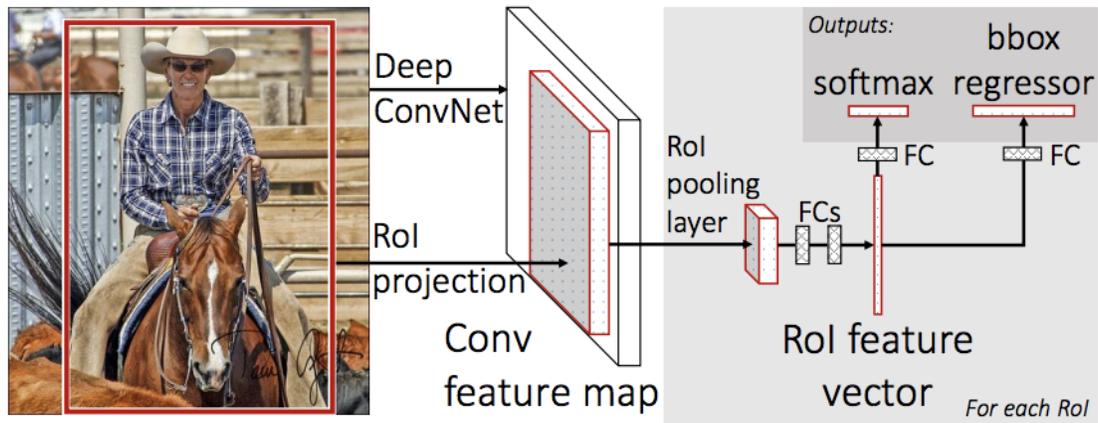
## R-CNN: *Regions with CNN features*



очень медленно

# Fast RCNN

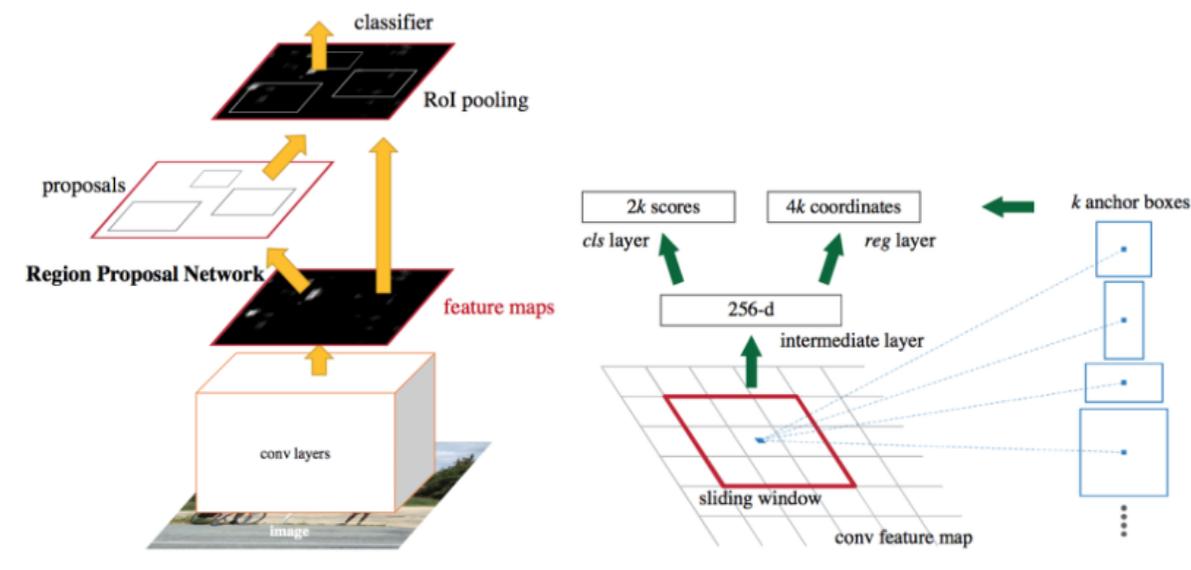
full convolutional



# faster CNN

регионы тоже с помощью сети

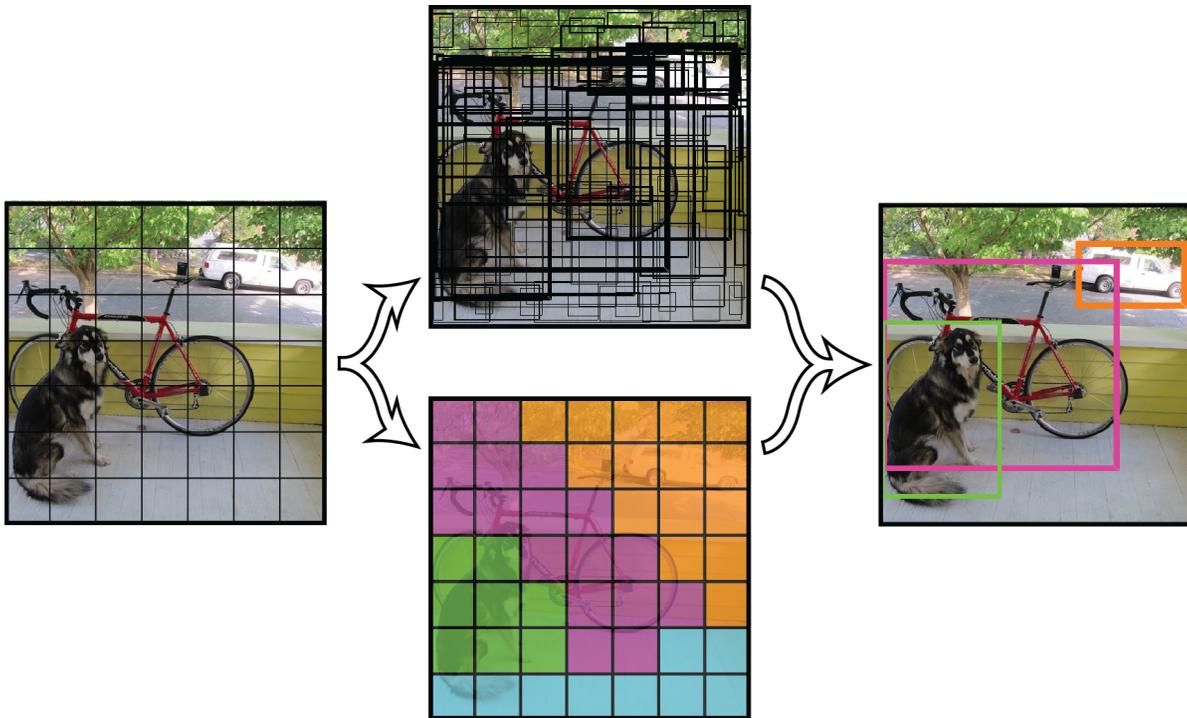
end-to-end сетка



любой CNN можно использовать

# YOLO

you look only once



# Семантическая сегментация

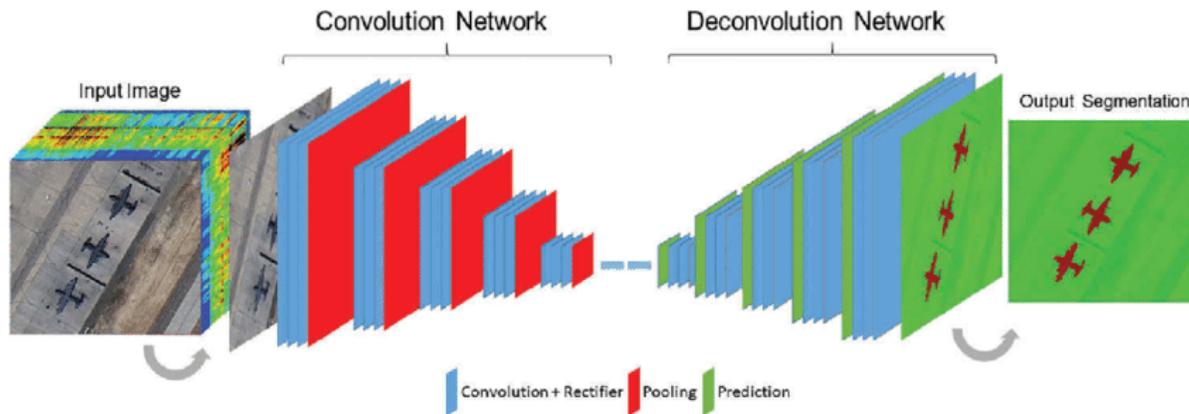


Input



Segmentation [9]

# Hourglass architecture



# unpooling

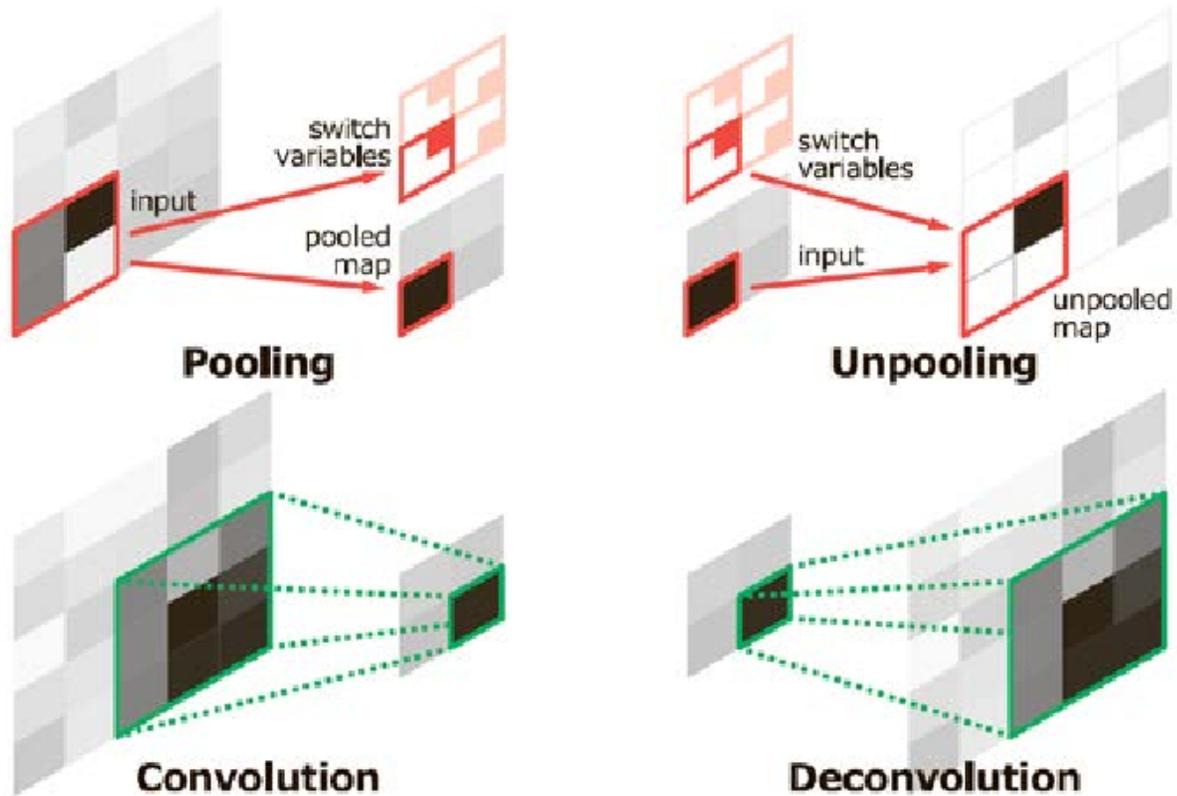
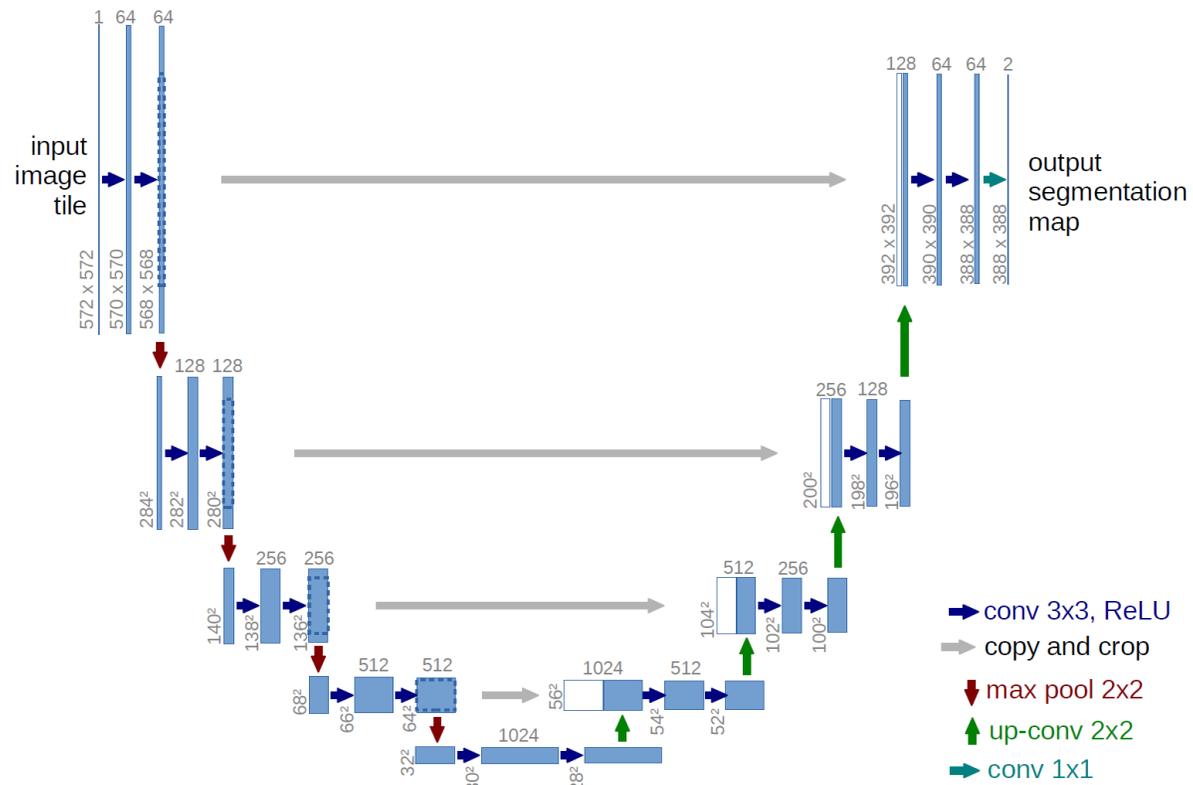


Fig. 1. Illustration of deconvolution and unpooling layers [43]

# UNET

добавляем shortcut connections(RESNET)

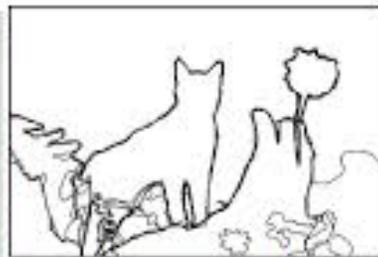


Сегментация как "картинку в картинку"

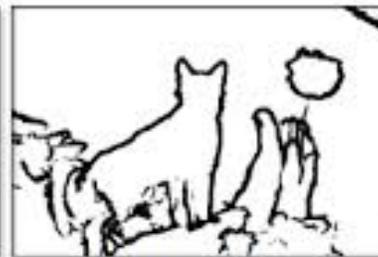
## edge detection



(a) original image



(b) ground truth



(c) HED: output

# colorization

