

Image segmentation

Image classification



Discrete labels:
[cat, dog, ...]

Cat

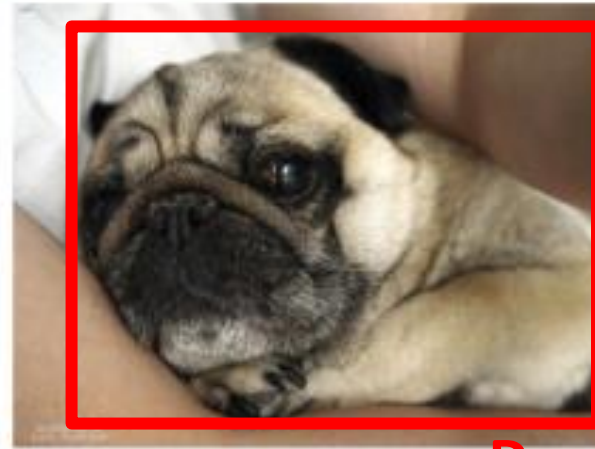


Dog

Image classification w/t localization



Cat



Dog

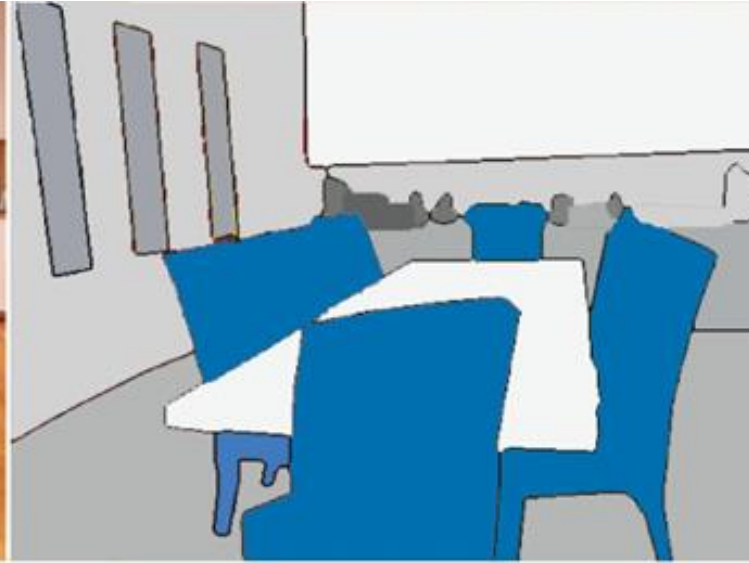
Object detection



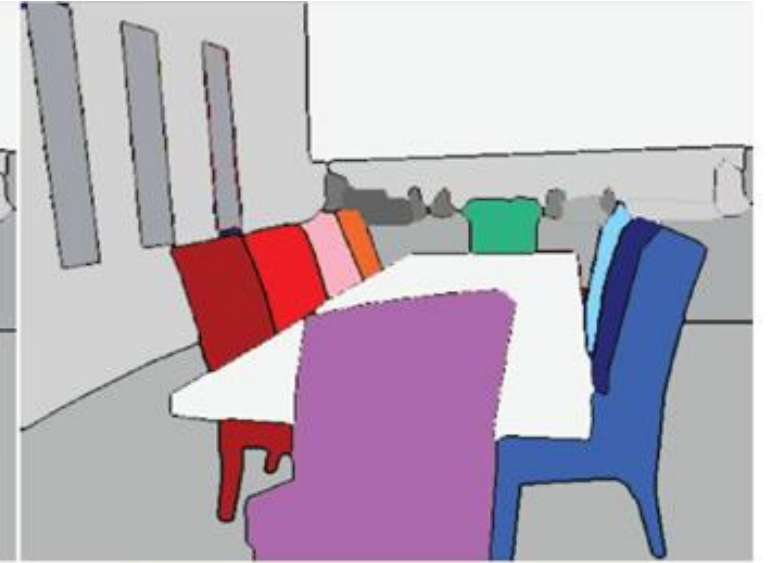
Image segmentation



Input Image



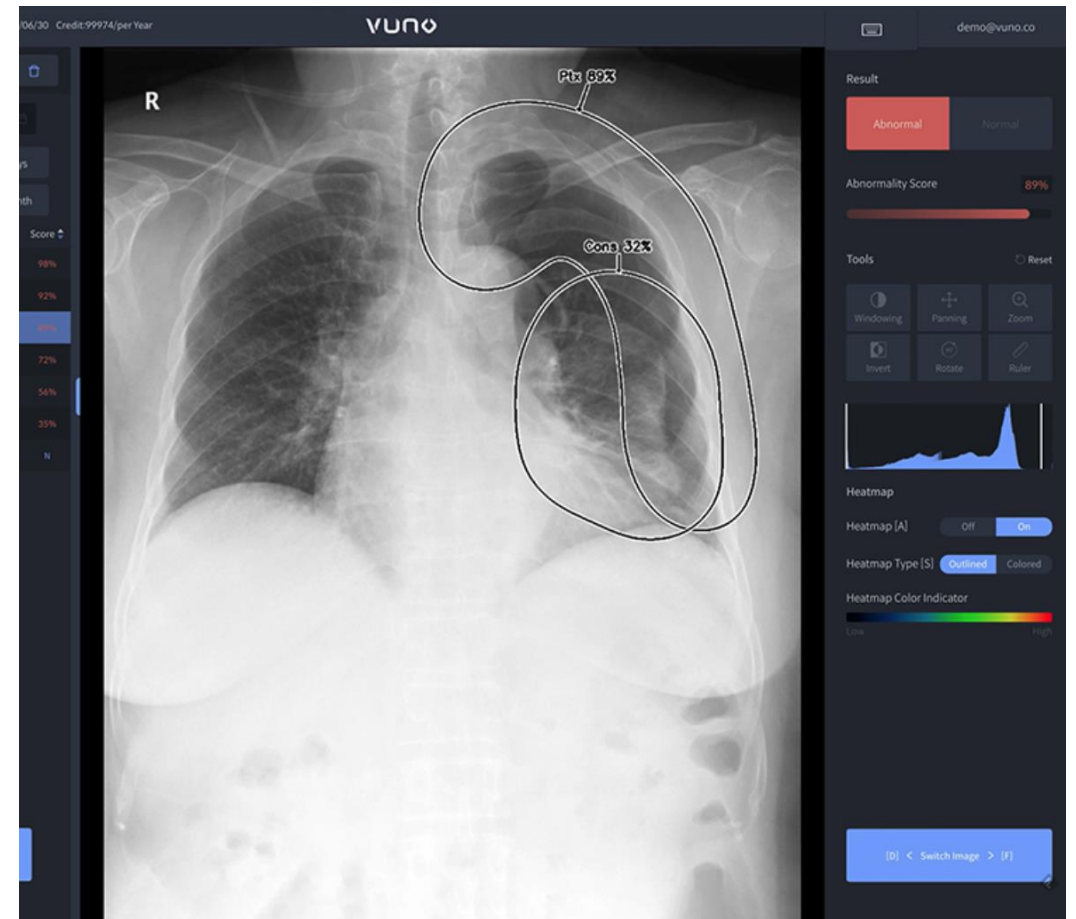
Semantic Segmentation



Instance Segmentation

Real world application

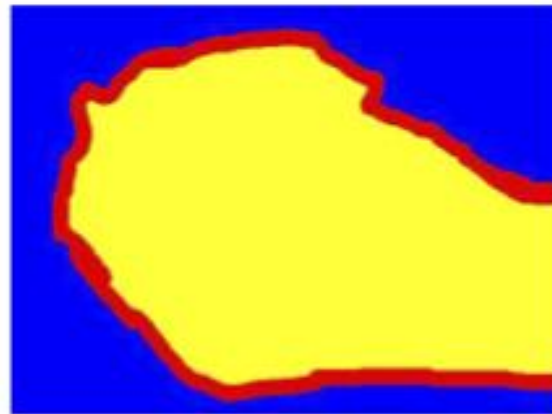
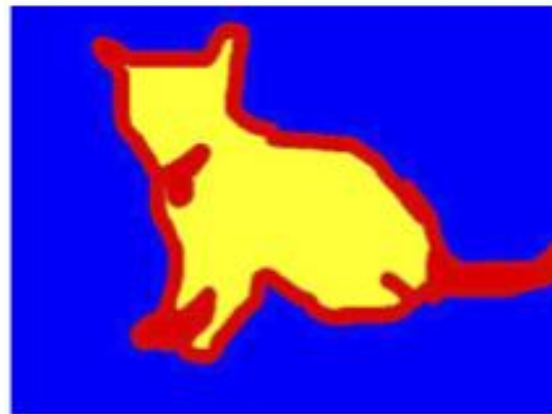
DeepLab V3 xception_cityscapes_trainline (GTX980M) INPUT_SIZE=1539
Prediction time: 314ms (3.2 fps) AVG: 208ms (4.8 fps)



Understanding data



Image

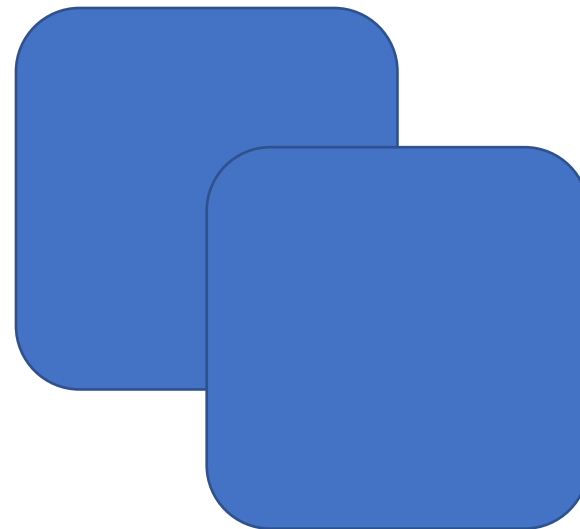
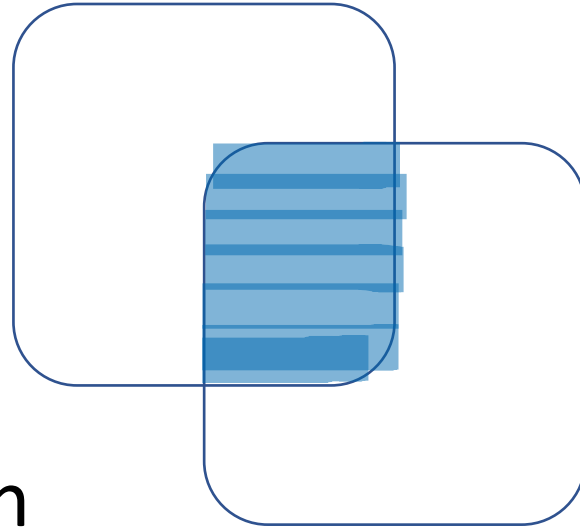


Mask

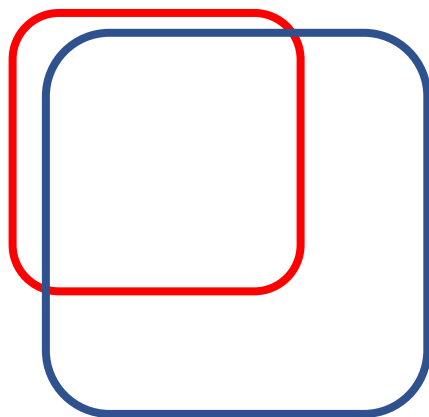
Intersection over Union

$$\frac{TP}{TP + FP + FN}$$

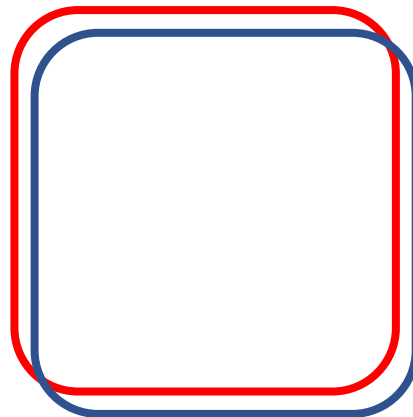
$$\text{IoU} = \frac{\text{Intersection}}{\text{Union}}$$



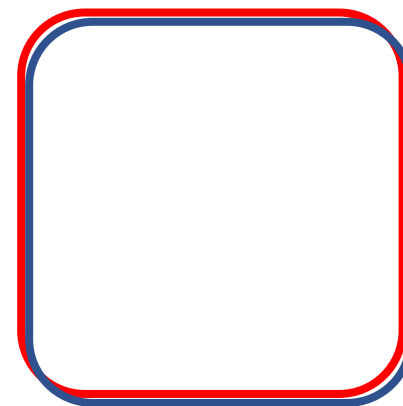
Intersection over Union



IoU : 0.4



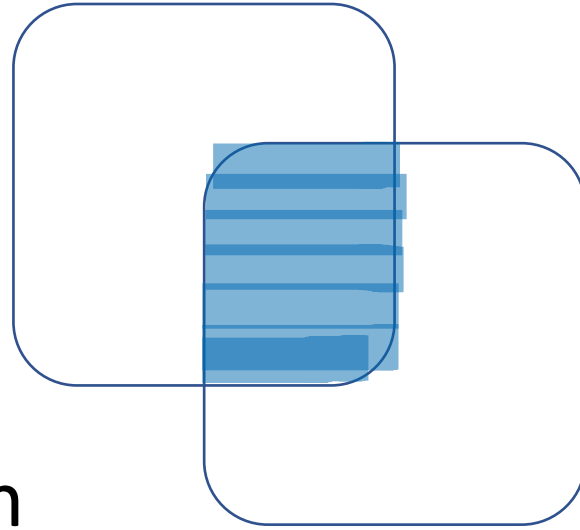
IoU : 0.7



IoU : 0.9

Dice coefficient

$$\frac{2TP}{2TP + FP + FN}$$



Dice = $\frac{2 * \text{Intersection}}{\text{Prediction} + \text{Ground truth}}$

