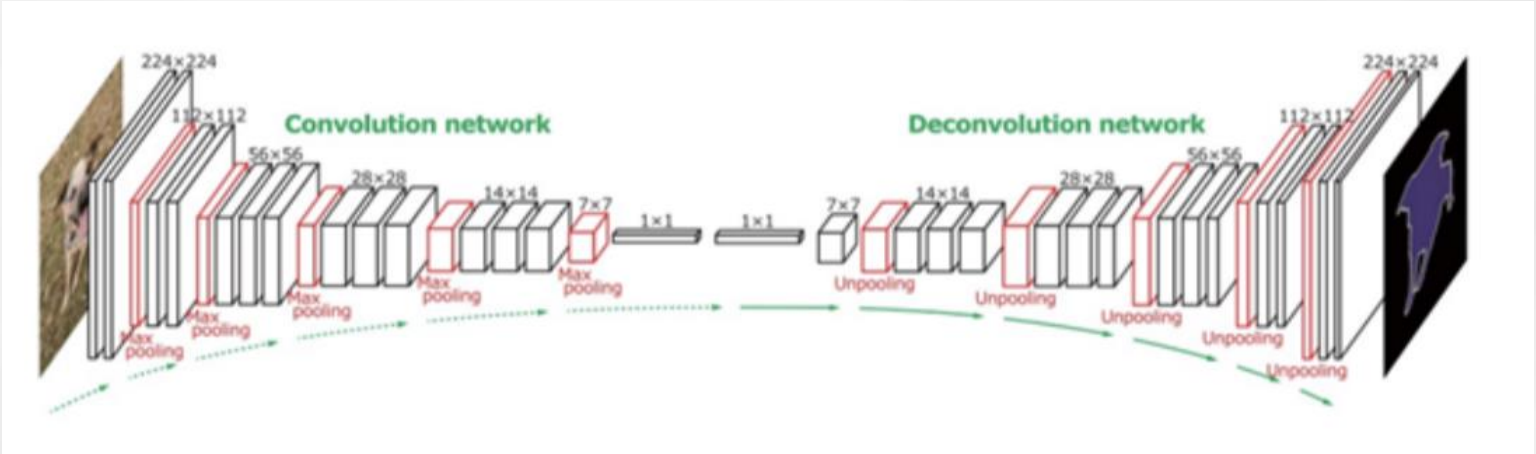
Chapter 03. 이미지 처리 분야 딥러닝 모델 (Image Segmentation)

Convolution and Deconvolution Network



https://laonple.blog.me/220985349467

FCN 의 문제점

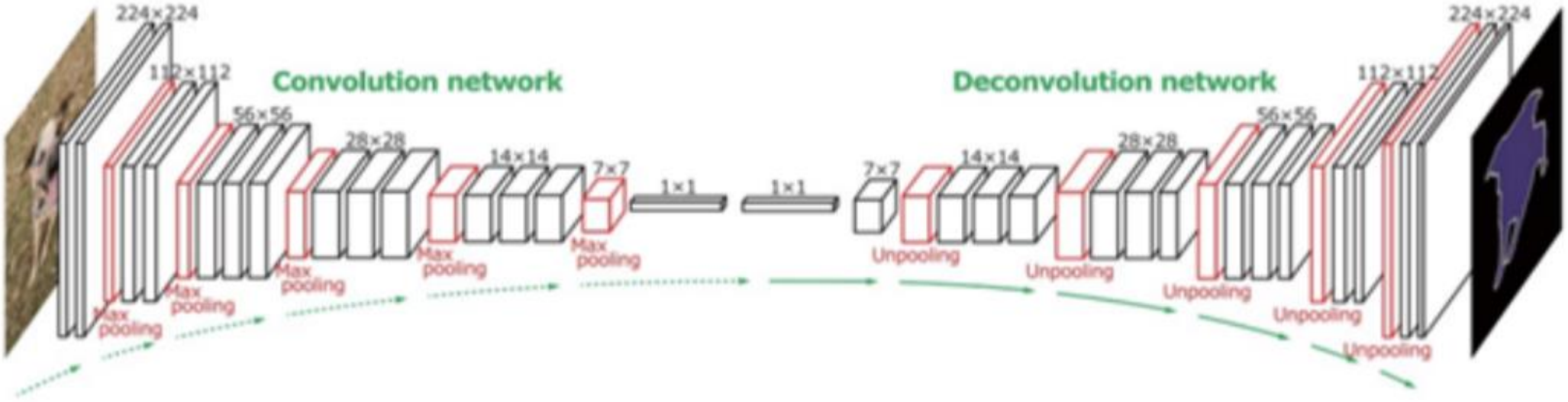
(a) Inconsistent labels due to large object size

(b) Missing labels due to small object size

Convolution :
제한된 Receptive Field

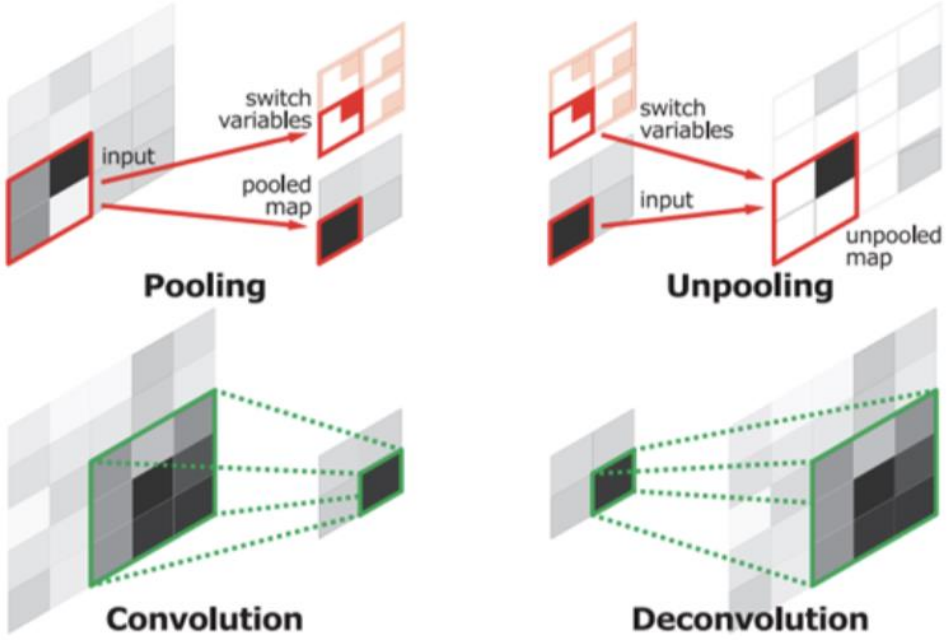
Downsampling -> Upsampling :
smoothing

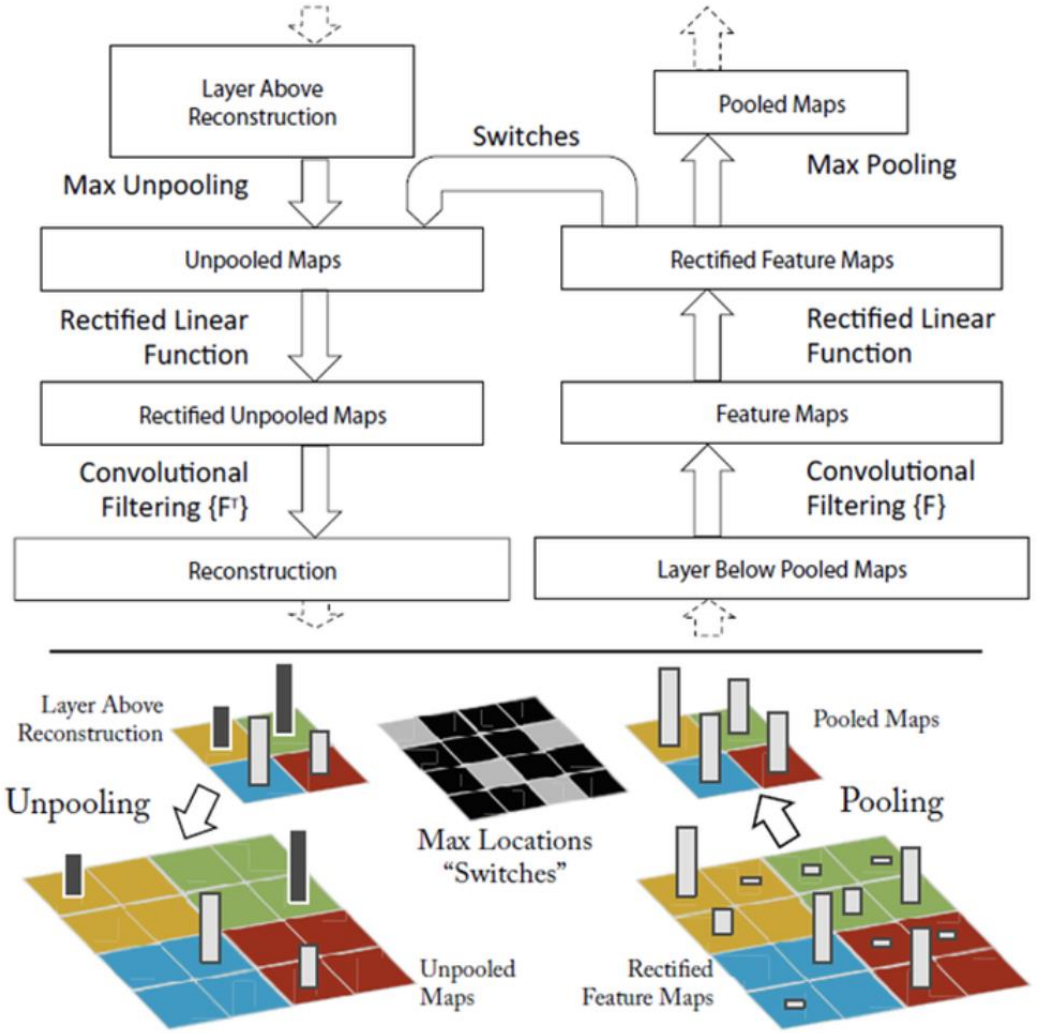
Convolution and Deconvolution Network



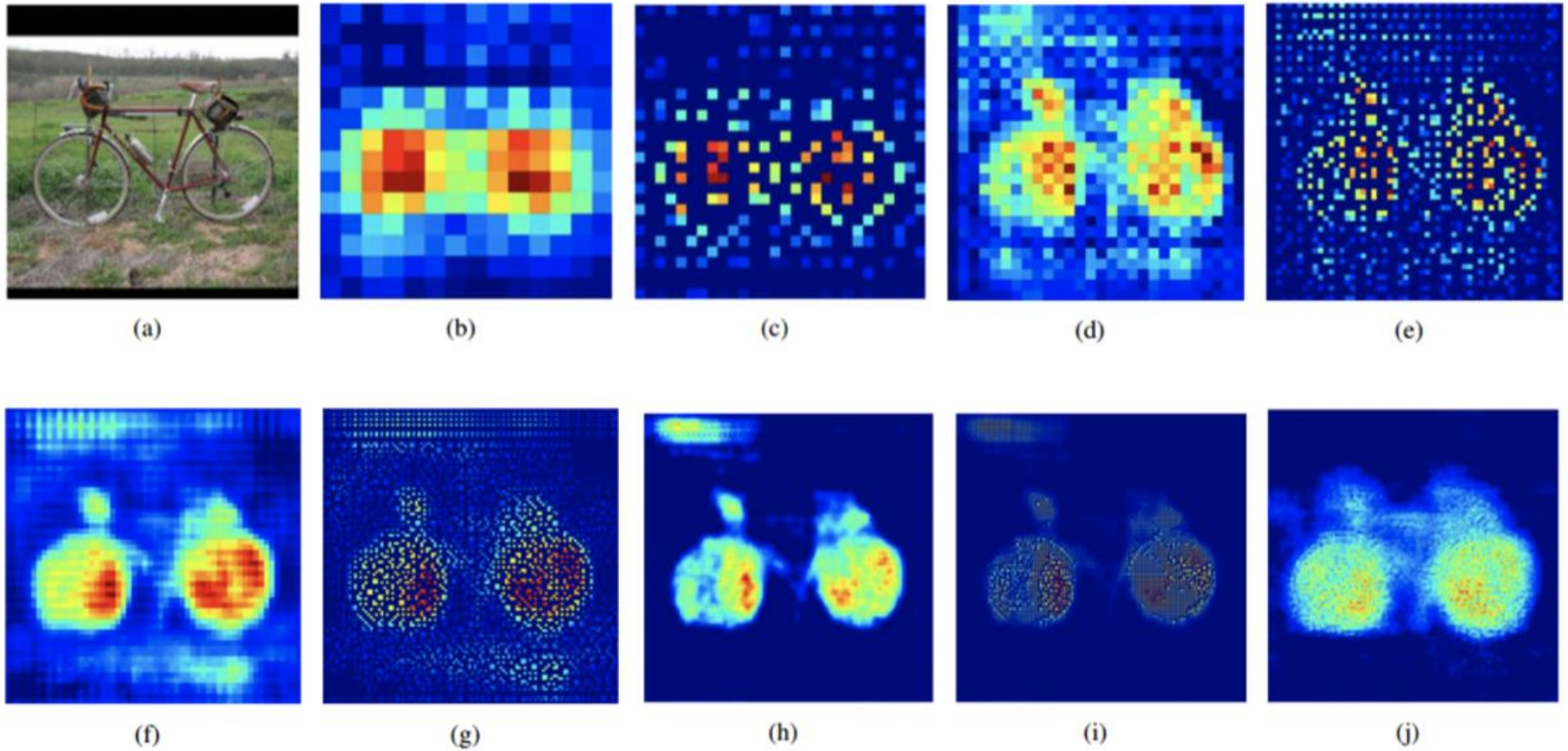
대칭적 구조
VGG – 16
Max pooling 시 최대 지점 저장 switch (ZFNet)

Switch Variable

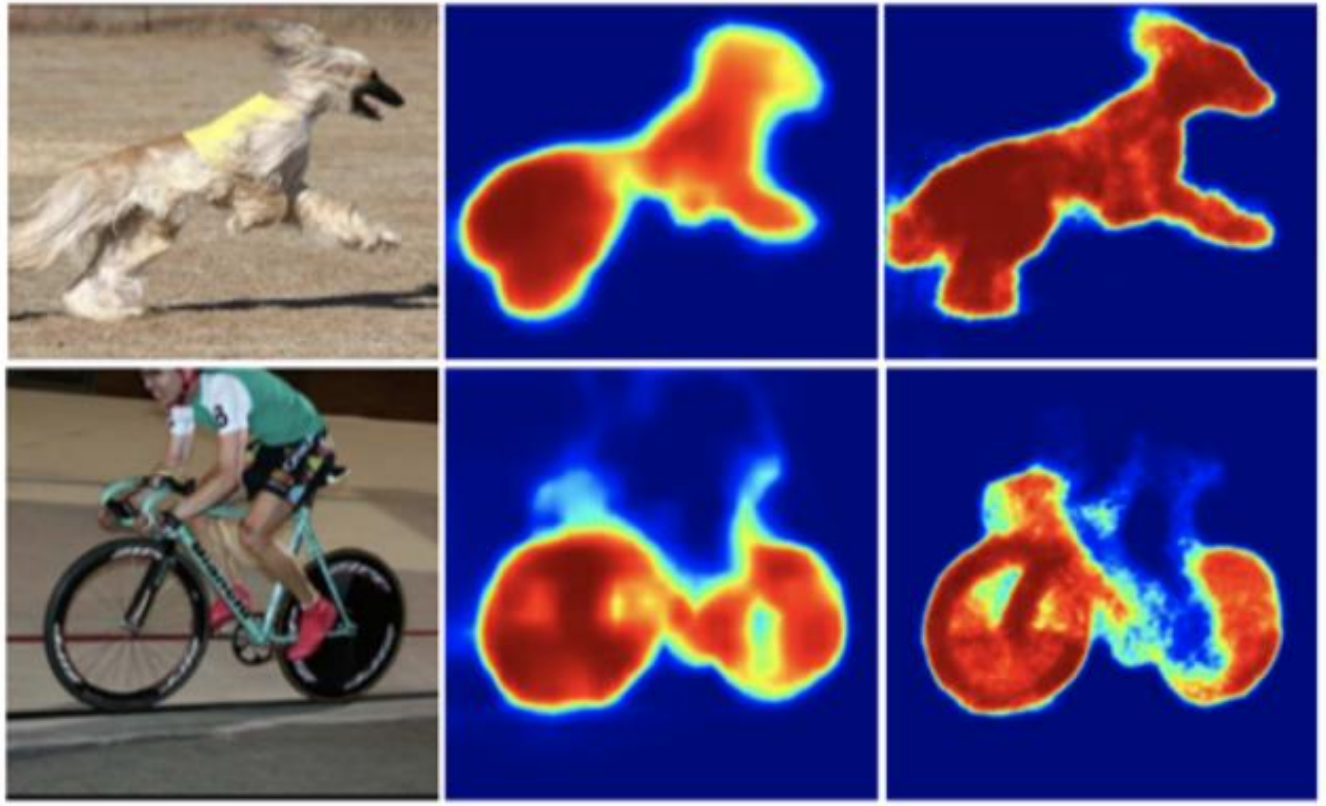




Deconvolution



FCN vs Convolution and Deconvolution



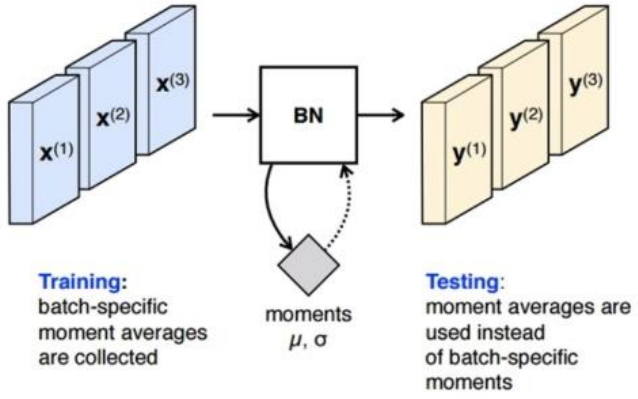
(a) Input image (b) FCN-8s (c) Ours

Figure 5. Comparison of class conditional probability maps from FCN and our network (top: dog, bottom: bicycle).

Convolution and Deconvolution Network

2개의 VGG – 16 -> Overfitting

Bath Normailization

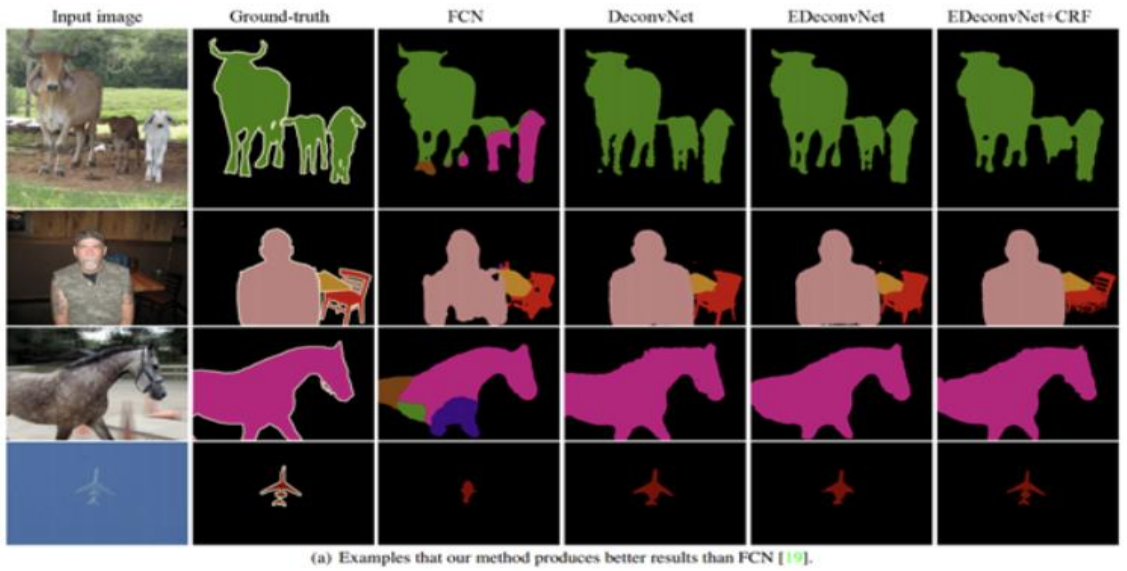


Data Augmentation

Pascal VOC 데이터 이용
약 300만장, Titan X GPU 학습 6일

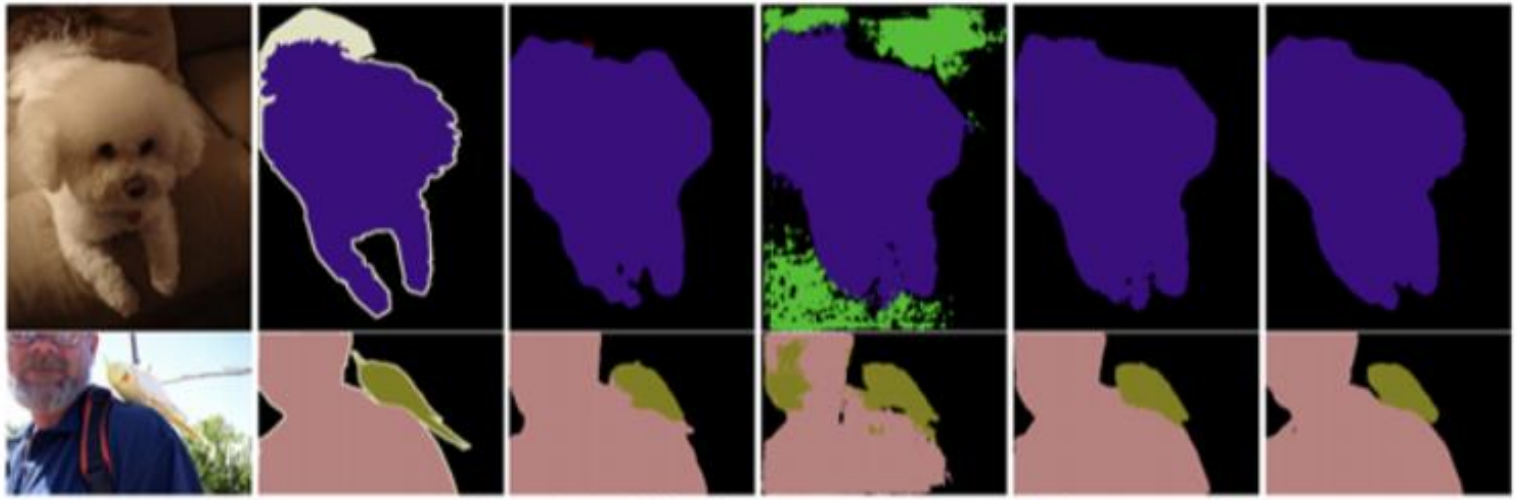
2 stage training

1) Easy image :
centered , small object size variance
(20 만장)
2) Hard image :
Various position, size variance
(270 만장)

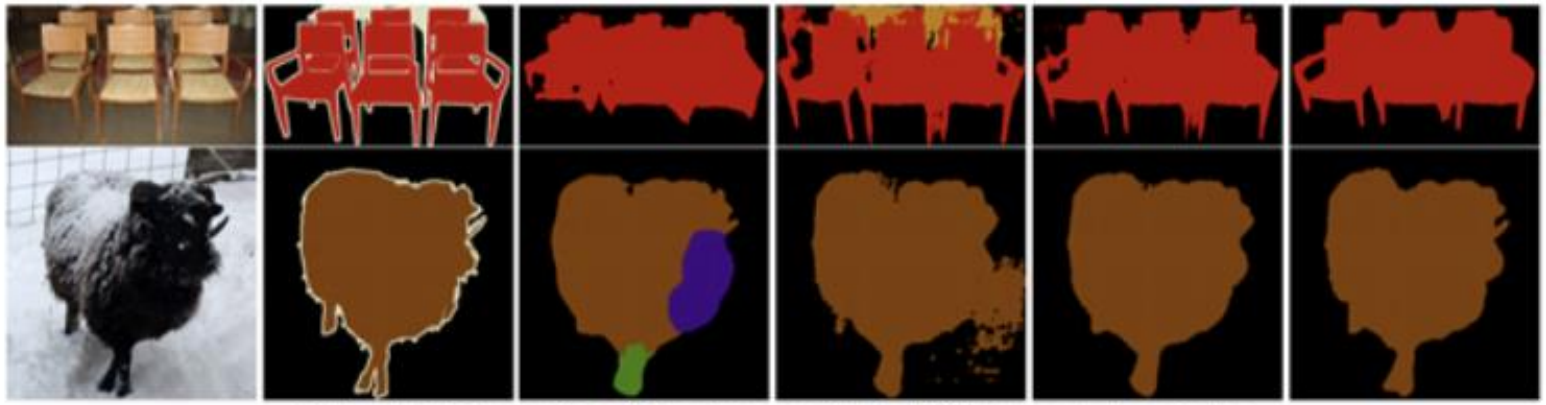


(a) Examples that our method produces better results than FCN [19].

Convolution and Deconvolution Network



(b) Examples that FCN produces better results than our method.



(c) Examples that inaccurate predictions from our method and FCN are improved by ensemble.

Thank You