

RFCN:

block1: $h*w*64*3*3*4 + h*w*64*3*3*64 + h*w*64 = 39232*h*w$
block2: $h/2*w/2*128*3*3*64 + h/2*w/2*128*3*3*128 + h/2*w/2*128 = 55328*h*w$
block3: $h/4*w/4*256*3*3*128 + h/4*w/4*256*3*3*256 + h/4*w/4*256*3*3*256 + h/4*w/4*256 = 92176*h*w$
block4: $h/8*w/8*512*3*3*256 + h/8*w/8*512*3*3*512 + h/8*w/8*512*3*3*512 + h/8*w/8*512 = 92168*h*w$
block5: $h/16*w/16*512*3*3*512 + h/16*w/16*512*3*3*512 + h/16*w/16*512*3*3*512 + h/16*w/16*512 = 27650*h*w$
Fc6: $h/32*w/32*4096*7*7*512 = 100352*h*w$
fc7: $h/32*w/32*4096*4096 = 16384*h*w$
score: $h/32*w/32*60*4096 = 240*h*w$
upscore2: $h/16*w/16*60*4*4*60 = 225*h*w$
Score pool4: $h/16*w/16*60*512 = 120*h*w$
fuse: $h/16*w/16*60 = 0.234375*h*w$
upsample_fused16: $h/8*w/8*60*4*4*60 = 900*h*w$
score_pool3: $h/8*w/8*60*256 = 240*h*w$
score_final: $h/8*w/8*60 = 0.9375*h*w$
bigscore: $h*w*2*16*16*60 = 30720*h*w$

Totally:

$39232 + 55328 + 92176 + 92168 + 27650 + 100352 + 16384 + 240 + 225 + 120 + 0.234375 + 900 + 240 + 0.9375 + 30720 = 455736.171875*h*w$

参数量:

block1: $64*4*3*3 + 64*64*3*3 = 39168$
block2: $128*64*3*3 + 128*128*3*3 = 221184$
block3: $256*128*3*3 + 256*256*3*3 + 256*256*3*3 = 1474560$
block4: $512*256*3*3 + 512*512*3*3 + 512*512*3*3 = 5898240$
block5: $512*512*3*3 + 512*512*3*3 + 512*512*3*3 = 7077888$
fc6: $512*4096*3*3 = 18874368$
fc7: $4096*4096 = 16777216$
score: $4096*60 = 2457604$
Upscore2: $60*60*4*4 = 57600$
scorepool4: $512*60 = 30720$
upsample_fused16: $60*60*4*4 = 57600$
bigscore: $60*2*16*16 = 30720$

Totally:

$39168 + 221184 + 1474560 + 5898240 + 7077888 + 18874368 + 16777216 + 2457604 + 57600 + 30720 + 57600 + 30720 = 52996868$

DS:

block1: $h*w*64*3*3*3 + h*w*64*3*3*64 + h/2*w/2*64*2*2 = 38656*h*w$
block2: $h/2*w/2*128*3*3*64 + h/2*w/2*128*3*3*128 + h/4*w/4*128*2*2 = 55328*h*w$
block3: $h/4*w/4*256*3*3*128 + h/4*w/4*256*3*3*256 + h/4*w/4*256*3*3*256 + h/4*w/4*256 = 92176*h*w$
block4: $h/8*w/8*512*3*3*256 + h/8*w/8*512*3*3*512 + h/8*w/8*512*3*3*512 + h/8*w/8*512 = 92168*h*w$
block5: $h/16*w/16*512*3*3*512 + h/16*w/16*512*3*3*512 + h/16*w/16*512*3*3*512 + h/16*w/16*512 = 27650*h*w$
conv6: $h/32*w/32*4096*7*7*512 = 100352*h*w$
conv7: $h/32*w/32*4096*1*1*4096 = 16384*h*w$
score: $h/32*w/32*1*1*1*4096 = 4*h*w$
deconv: $h*w*1*63*63*1 = 3969*h*w$

Totally:

$38656 + 55328 + 92176 + 92168 + 27650 + 100352 + 16384 + 4 + 3969 = 426687*h*w$

参数量:

$$\text{block1: } 64*3*3*3 + 64*64*3*3 = 38592$$

$$\text{block2: } 128*64*3*3 + 128*128*3*3 = 221184$$

$$\text{block3: } 256*128*3*3 + 256*256*3*3 + 256*256*3*3 = 1474560$$

$$\text{block4: } 512*256*3*3 + 512*512*3*3 + 512*512*3*3 = 5898240$$

$$\text{block5: } 512*512*3*3 + 512*512*3*3 + 512*512*3*3 = 7077888$$

$$\text{conv6: } 4096*512*3*3 = 18874368$$

$$\text{conv7: } 4096*4096*1*1 = 16777216$$

$$\text{score: } 4096*1*1*1 = 4096$$

$$\text{deconv: } 63$$

Totally:

$$38592 + 221184 + 1474560 + 5898240 + 7077888 + 18874368 + 16777216 + 4096 + 63 = 50366207$$

DCL:

$$\text{data_conv: } h*w*128*3*3*3 = 3456*h*w$$

$$\text{data_fc: } h*w*128*128 = 16384*h*w$$

$$\text{data_ms_saliency: } h*w*128 = 128*h*w$$

$$\text{conv1_1: } h*w*64*3*3*3 = 1728*h*w$$

$$\text{conv1_2: } h*w*64*3*3*64 = 36864*h*w$$

$$\text{pool1: } h/2*w/2*64*3*3 = 144*h*w$$

$$\text{pool1_conv: } h/2*w/2*128*3*3*64 = 18432*h*w$$

$$\text{pool1_fc: } h/2*w/2*128*128 = 4096*h*w$$

$$\text{pool1_ms_saliency: } h/2*w/2*128 = 32*h*w$$

$$\text{conv2_1: } h/2*w/2*128*3*3*128 = 36864*h*w$$

$$\text{conv2_2: } h/2*w/2*128*3*3*128 = 36864$$

$$\text{pool2: } h/4*w/4*128*3*3 = 72*h*w$$

$$\text{pool2_conv: } h/4*w/4*128*3*3*128 = 9216*h*w$$

$$\text{pool2_fc: } h/4*w/4*128*128 = 1024*h*w$$

$$\text{pool2_ms_saliency: } h/4*w/4*128 = 8*h*w$$

block3:

$$h/4*w/4*256*3*3*128 + h/4*w/4*256*3*3*256 + h/4*w/4*256*3*3*256 + h/8*w/8*256*3*3 + h/8*w/8*128*3*3*256 + h/8*w/8*128*128 + h/8*w/8*128 = 97170*h*w$$

block4:

$$h/8*w/8*512*3*3*256 + h/8*w/8*512*3*3*512 + h/8*w/8*512*3*3*512 + h/8*w/8*512*3*3 + h/8*w/8*128*3*3*512 + h/8*w/8*128*128 + h/8*w/8*128 = 101706*h*w$$

block5:

$$h/8*w/8*512*5*5*512 + h/8*w/8*512*5*5*512 + h/8*w/8*512*5*5*512 + h/8*w/8*512*3*3 + h/8*w/8*4096*8*8*512 + h/8*w/8*4096*4096 + h/8*w/8*4096 = 2666632*h*w$$

fuse:

$h*w*6$

Totally:

$3456 + 16384 + 128 + 1728 + 36864 + 144 + 18432 + 4096 + 32 + 36864 + 36864 + 72 + 9216 + 1024 + 8 + 97170 + 101706 + 2666632 + 6 = 3030826*h*w$

参数量:

data: $3*128*3*3 + 128*128*1*1 + 128*1*1*1 = 19968$

block1: $3*64*3*3 + 64*64*3*3 + 64*128*3*3 + 128*128*1*1 + 128*1*1*1 = 128832$

block2: $128*128*3*3 + 128*128*3*3 + 128*128*3*3 + 128*128*1*1 + 128*1*1*1 = 458880$

block3: $128*256*3*3 + 256*256*3*3 + 256*256*3*3 + 256*128*3*3 + 128*128*1*1 + 128*1*1*1 = 1785984$

block4: $256*512*3*3 + 512*512*3*3 + 512*512*3*3 + 512*128*3*3 + 128*128*1*1 + 128*1*1*1 = 6504576$

block5: $512*512*3*3 + 512*512*3*3 + 512*512*3*3 + 512*4096*4*4 + 4096*4096*1*1 + 4096*1*1*1 = 57413632$

Totally:

$19968 + 128832 + 458880 + 1785984 + 6504576 + 57413632 = 66311872$

Mobilenet + deeplabv3:

head_conv: $h/2*w/2*32*3*3$

block1: $456*h*w$

block2: $582*h*w + 513*h*w = 1095*h*w$

block3: $308*h*w + 219*h*w + 219*h*w = 746*h*w$

block4: $315*h*w + 822*h*w + 822*h*w + 822*h*w = 2781*h*w$

block5: $1014*h*w + 1809*h*w + 1809*h*w = 4632*h*w$

Block6: $2385*h*w + 4935*h*w + 4935*h*w = 12255*h*w$

block7: $7335*h*w$

ASPP:

Aspp0: $h/8*w/8*256*320 = 1280*h*w$

apss1, 2, 3: $h/8*w/8*256*320*3*3 * 3 = 34560*h*w$

Other:

GAP conv:

$256*1*1*320 = 81920$

Concate conv:

$h/8*w/8*256*1280 = 5120*h*w$

Low feature conv:

$h/4*w/4*48*24 = 72*h*w$

Concate conv:

$$h/4*w/4*304*1 = 19*h*w$$

Totally:

$$(456 + 1095 + 746 + 2781 + 4632 + 12255 + 7335 + 1280 + 34560 + 5120 + 72 + 19)*h*w + 81920 = 70351*h*w + 81920$$

参数量:

$$\text{head_conv: } 3*3*3*32 = 864$$

$$\text{block1: } 10752$$

$$\text{block2: } 86784 + 193536 = 280320$$

$$\text{block3: } 194688 + 344064 + 344064 = 882816$$

$$\text{block4: } 350208 + 4128768 = 4478976$$

$$\text{block5: } 1388544 + 6193152 = 7581696$$

$$\text{block6: } 3133440 + 17203200 = 20336640$$

$$\text{block7: } 8755200$$

$$\text{ASPP: } 320*1*1*256 + 320*3*3*256*3 = 2293760$$

$$\text{Gap conv: } 320*1*1*256 = 81920$$

$$\text{Conv: } 1280*256*1*1 = 327680$$

$$\text{conv2: } 24*48*1*1 = 1152$$

$$\text{last_conv: } 304*1*1*1 = 304$$

Totally:

$$864 + 10752 + 280320 + 882816 + 4478976 + 7581696 + 20336640 + 8755200 + 2293760 + 81920 + 327680 + 1152 + 304 = 45032080$$

UCF:

$$\text{Conv1: input: } h*w*3 \text{ output: } h/2*w/2*64$$

$$\text{cost: } h*w*64*3*3*3 + h*w*64*3*3*64 + h*w*64 = 38656*h*w$$

$$\text{Conv2: input: } h/2*w/2*64 \text{ output: } h/4*w/4*128$$

$$\text{cost: } h/2*w/2*128*3*3*64 + h/2*w/2*128*3*3*128 + h/2*w/2*128 = 55328*h*w$$

$$\text{Conv3: input: } h/4*w/4*128 \text{ output: } h/8*w/8*256$$

$$\text{cost: } h/4*w/4*256*3*3*128 + h/4*w/4*256*3*3*256*2 + h/4*w/4*256 = 92176*h*w$$

$$\text{conv4: input: } h/8*w/8*256 \text{ output: } h/16*w/16*512$$

$$\text{cost: } h/8*w/8*512*3*3*256 + h/8*w/8*512*3*3*512*2 + h/8*w/8*512 = 92168*h*w$$

$$\text{Conv5: input: } h/16*w/16*512 \text{ output: } h/32*w/32*512$$

$$\text{cost: } h/16*w/16*512*3*3*512*3 + h/16*w/16*512 = 27650*h*w$$

$$\text{deconv5: input: } h/32*w/32*512 \text{ output: } h/16*w/16*512$$

$$\text{cost: } h/16*w/16*512*8(\text{bilinear interpolation}) + h/16*w/16*512*3*3*512*3 = 27664*h*w$$

deconv4: input: $h/16*w/16*512$ output: $h/8*w/8*256$
cost: $h/8*w/8*512*8 + h/8*w/8*512*3*3*512*2 + h/8*w/8*256*3*3*512 = 92224*h*w$

deconv3: input: $h/8*w/8*256$ output: $h/4*w/4*128$
cost: $h/4*w/4*256*8 + h/4*w/4*256*3*3*256*2 + h/4*w/4*128*3*3*256 = 92288*h*w$

deconv2: input: $h/4*w/4*128$ output: $h/2*w/2*64$
cost: $h/2*w/2*128*8 + h/2*w/2*128*3*3*128 + h/2*w/2*64*3*3*128 = 55552*h*w$

deconv1: input: $h/2*w/2*64$ output: $h*w*2$
cost: $h*w*64*8 + h*w*64*3*3*64 + h*w*2*3*3*64 = 38528*h*w$

Totally:
 $38656 + 55328 + 92176 + 92168 + 27650 + 27664 + 92224 + 92288 + 55552 + 38528 = 612234*h*w$

参数量:

conv1: $3*3*3*64 + 3*3*64*64 = 38592$
conv2: $3*3*64*128 + 3*3*128*128 = 221184$
conv3: $3*3*128*256 + 3*3*256*256 + 3*3*256*256 = 1474560$
conv4: $3*3*256*512 + 3*3*512*512 + 3*3*512*512 = 5898240$
conv5: $3*3*512*512 + 3*3*512*512 + 3*3*512*512 = 7077888$
deconv5: $3*3*512*512 + 3*3*512*512 + 3*3*512*512 = 7077888$
deconv4: $3*3*512*512 + 3*3*512*512 + 3*3*512*256 = 5898240$
deconv3: $3*3*256*256 + 3*3*256*256 + 3*3*256*128 = 1474560$
deconv2: $3*3*128*128 + 3*3*128*64 = 221184$
deconv1: $3*3*64*64 + 3*3*64*2 = 38016$

Totally:
 $38592 + 221184 + 1474560 + 5898240 + 7077888 + 7077888 + 5898240 + 1474560 + 221184 + 38016 = 29420352$

PAGRN: input: $h*w*3$

Block1: input: $h*w*3$ output: $h/2*w/2*64$
cost: $h*w*64*3*3*3 + h*w*64*3*3*64 + h*w*64 = 38656*h*w$

Block2: input: $h/2*w/2*64$ output: $h/4*w/4*128$
cost: $h/2*w/2*128*3*3*64 + h/2*w/2*128*3*3*128 + h/2*w/2*128 = 55328*h*w$

Block3: input: $h/4*w/4*128$ output: $h/8*w/8*256$
cost: $h/4*w/4*256*3*3*128 + h/4*w/4*256*3*3*256*3 + h/4*w/4*256 = 129040*h*w$

Block4: input: $h/8*w/8*256$ output: $h/16*w/16*512$
cost: $h/8*w/8*512*3*3*256 + h/8*w/8*512*3*3*512*3 + h/8*w/8*512 = 129032*h*w$

Block5: input: $h/16*w/16*512$ output: $h/16*w/16*512$
cost: $h/16*w/16*512*3*3*512*5 = 46080*h*w$

attention5:

$$h/16*w/16*512 + 1*1*512*512 + h/16*w/16*512 + h/16*w/16*512*512 + h/16*w/16*512 + h/8*w/8*512 + h/8*w/8*256*1*1*512 = 265230*h*w$$

attention4:

$$h/8*w/8*256 + 1*1*256*256 + h/8*w/8*256 + h/8*w/8*256*256 + h/8*w/8*256 + h/4*w/4*256 + h/4*w/4*256*256 = 70684*h*w$$

attention3:

$$h/4*w/4*256 + 1*1*256*256 + h/4*w/4*256 + h/4*w/4*256*256 + h/4*w/4*256 = 69680*h*w$$

saliency_map:

$$h/4*w/4*1*1*256 = 16*h*w$$

totally:

$$38656 * h*w + 55328*h*w + 129040*h*w + 129032*h*w + 46080*h*w + 265230*h*w + 70684*h*w + 69680*h*w + 16*h*w = 803746 * h*w$$

参数量:

$$\text{Block1: } 3*3*3*64 + 3*3*64*64 = 38592$$

$$\text{Block2: } 3*3*64*128 + 3*3*128*128 = 221184$$

$$\text{Block3: } 3*3*128*256 + 3*3*256*256 + 3*3*256*256 + 3*3*256*256 = 2064384$$

$$\text{Block4: } 3*3*256*512 + 3*3*512*512 + 3*3*512*512 + 3*3*512*512 = 8257536$$

$$\text{Block5: } 3*3*512*512 * 5 = 11796480$$

$$\text{attention5: } 512*512*2 + 512*256 = 655360$$

$$\text{attention4: } 256*256*3 = 65536$$

$$\text{attention3: } 256*256*3 = 65536$$

$$\text{saliency_map} = 256$$

$$\text{totally: } 38592 + 221184 + 2064384 + 8257536 + 11796480 + 655360 + 65536 + 65536 + 256 = 23164864$$

NLDF: input: 354*354

Conv1: input: $h*w*3$ output: $h/2*w/2*64$

$$\text{cost: } h*w*64*3*3*3 + h*w*64*3*3*64 + h*w*64 = 38656*h*w$$

Conv2: input: $h/2*w/2*64$ output: $h/4*w/4*128$

$$\text{cost: } h/2*w/2*128*3*3*64 + h/2*w/2*128*3*3*128 + h/2*w/2*128 = 55328*h*w$$

Conv3: input: $h/4*w/4*128$ output: $h/8*w/8*256$

$$\text{cost: } h/4*w/4*256*3*3*128 + h/4*w/4*256*3*3*256*2 + h/4*w/4*256 = 92176*h*w$$

conv4: input: $h/8*w/8*256$ output: $h/16*w/16*512$

$$\text{cost: } h/8*w/8*512*3*3*256 + h/8*w/8*512*3*3*512*2 + h/8*w/8*512 = 92168*h*w$$

Conv5: input: $h/16*w/16*512$ output: $h/32*w/32*512$

$$\text{cost: } h/16*w/16*512*3*3*512*3 + h/16*w/16*512 = 27650*h*w$$

Conv6: input: $h/2 \cdot w/2 \cdot 64$ output: $h/2 \cdot w/2 \cdot 128$
cost: $h/2 \cdot w/2 \cdot 128 \cdot 3 \cdot 3 \cdot 64 = 18432 \cdot h \cdot w$

Conv7: input: $h/4 \cdot w/4 \cdot 128$ output: $h/4 \cdot w/4 \cdot 128$
cost: $h/4 \cdot w/4 \cdot 128 \cdot 3 \cdot 3 \cdot 128 = 9216 \cdot h \cdot w$

Conv8: input: $h/8 \cdot w/8 \cdot 256$ output: $h/8 \cdot w/8 \cdot 128$
cost: $h/8 \cdot w/8 \cdot 128 \cdot 3 \cdot 3 \cdot 256 = 4608 \cdot h \cdot w$

Conv9: input: $h/16 \cdot 2/16 \cdot 512$ output: $h/16 \cdot w/16 \cdot 128$
Cost: $h/16 \cdot w/16 \cdot 128 \cdot 3 \cdot 3 \cdot 512 = 2304 \cdot h \cdot w$

Conv10: input: $h/32 \cdot w/32 \cdot 512$ output: $h/32 \cdot w/32 \cdot 128$
cost: $h/32 \cdot w/32 \cdot 128 \cdot 3 \cdot 3 \cdot 512 = 576 \cdot h \cdot w$

contrast1:
 $h/2 \cdot w/2 \cdot 128 + h/2 \cdot w/2 \cdot 128 \cdot 3 \cdot 3 = 320 \cdot h \cdot w$

contrast2:
 $h/4 \cdot w/4 \cdot 128 + h/4 \cdot w/4 \cdot 128 \cdot 3 \cdot 3 = 80 \cdot h \cdot w$

Contrast3:
 $h/8 \cdot w/8 \cdot 128 + h/8 \cdot w/8 \cdot 128 \cdot 3 \cdot 3 = 20 \cdot h \cdot w$

Contrast4:
 $h/16 \cdot w/16 \cdot 128 \cdot (1+3 \cdot 3) = 5 \cdot h \cdot w$

Contrast5:
 $h/32 \cdot w/32 \cdot 128 \cdot (1+3 \cdot 3) = 1.25 \cdot h \cdot w$

unpooling5: input: $h/32 \cdot w/32 \cdot (128+128)$ output: $h/16 \cdot 2/16 \cdot 128$
cost: $h/16 \cdot w/16 \cdot 128 \cdot 5 \cdot 5 \cdot 256 = 3200 \cdot h \cdot w$

Unpooling4: input: $h/16 \cdot w/16 \cdot (128 \cdot 2 + 128)$ output: $h/8 \cdot w/8 \cdot 256$
cost: $h/8 \cdot w/8 \cdot 256 \cdot 5 \cdot 5 \cdot 128 \cdot 3 = 38400 \cdot h \cdot w$

Unpooling3: input: $h/8 \cdot w/8 \cdot (128 \cdot 2 + 256)$ output: $h/4 \cdot w/4 \cdot 384$
cost: $h/4 \cdot w/4 \cdot 384 \cdot 5 \cdot 5 \cdot 128 \cdot 4 = 307200 \cdot h \cdot w$

Unpooling2: input $h/4 \cdot w/4 \cdot (128 \cdot 2 + 384)$ output: $h/2 \cdot w/2 \cdot 512$
cost: $h/2 \cdot w/2 \cdot 512 \cdot 5 \cdot 5 \cdot 128 \cdot 5 = 2048000 \cdot h \cdot w$

Local: input: $h/2 \cdot w/2 \cdot (128 \cdot 2 + 512)$ output: $h/2 \cdot w/2 \cdot 640$
Cost: $h/2 \cdot w/2 \cdot 640 \cdot (128 \cdot 2 + 512) = 122880 \cdot h \cdot w$

Local score: $h/2 \cdot w/2 \cdot 640$ output: $h/2 \cdot w/2 \cdot 2$
cost: $h/2 \cdot w/2 \cdot 2 \cdot 640 = 320 \cdot h \cdot w$

Global: input: $h/32 \cdot w/32 \cdot 512$ ($11 \cdot 11 \cdot 512$) output: $1 \cdot 1 \cdot 128$
 $11 \cdot 11 \cdot 512 \rightarrow 7 \cdot 7 \cdot 128 \rightarrow 3 \cdot 3 \cdot 128 \rightarrow 1 \cdot 1 \cdot 128$
 $h/32 \cdot w/32 \cdot 512 \rightarrow (h/32-4) \cdot (w/32-4) \cdot 128 \rightarrow (h/32-8) \cdot (w/32-8) \cdot 128 \rightarrow (h/32-10) \cdot (w/32-10) \cdot 128$
Cost: $7 \cdot 7 \cdot 128 \cdot 5 \cdot 5 \cdot 512 + 3 \cdot 3 \cdot 128 \cdot 5 \cdot 5 \cdot 128 + 1 \cdot 1 \cdot 128 \cdot 3 \cdot 3 \cdot 128 = 84115456$ (without $h \cdot w$)
Cost: $(h/32-4) \cdot (w/32-4) \cdot 128 \cdot 5 \cdot 5 \cdot 512 + (h/32-8) \cdot (w/32-8) \cdot 128 \cdot 5 \cdot 5 \cdot 128 + (h/32-10) \cdot (w/32-10) \cdot 128 \cdot 3 \cdot 3 \cdot 128 = 2144 \cdot h \cdot w - 204800 \cdot (h+w) + 26214400 - 102400 \cdot (h+w) + 26214400 - 46080 \cdot (h+w) + 14745600 = 2144 \cdot h \cdot w - 353280 \cdot (h+w) + 67174400$ (with $h \cdot w$)

Global score: input: $1*1*128$ output: $1*1*2$
cost: $1*1*2*1*128 = 256$

add_score:
 $h/2*w/2*2 = 0.5*h*w$

totally:

$38656*h*w + 55328*h*w + 92176*h*w + 92168*h*w + 27650*h*w + 18432*h*w + 9216*h*w$
 $+ 4608*h*w + 2304*h*w + 576*h*w + 320*h*w + 80*h*w + 20*h*w + 5*h*w + 1.25*h*w +$
 $3200*h*w + 38400*h*w + 307200*h*w + 2048000*h*w + 122880*h*w + 320*h*w +$
 $84115456 + 256 + 0.5*h*w = 2861540.75*h*w + 84115712(\text{without } h*w)$

$2861540.75*h*w + 256 + 2144*h*w - 353280*(h+w) + 67174400 = 2863684.75*h*w -$
 $353280*(h+w) + 67174656 (\text{with } h*w)$

参数量:

conv1: $3*3*3*64 + 3*3*64*64 = 38592$
conv2: $3*3*64*128 + 3*3*128*128 = 221184$
conv3: $3*3*128*256 + 3*3*256*256 + 3*3*256*256 = 1474560$
conv4: $3*3*256*512 + 3*3*512*512 + 3*3*512*512 = 5898240$
conv5: $3*3*512*512 + 3*3*512*512 + 3*3*512*512 = 7077888$
conv6: $3*3*64*128 = 73728$
conv7: $3*3*128*128 = 147456$
conv8: $3*3*256*128 = 294912$
conv9: $3*3*512*128 = 589824$
conv10: $3*3*512*128 = 589824$
unpooling5: $5*5*256*128 = 819200$
unpooling4: $5*5*384*256 = 2457600$
unpooling3: $5*5*512*384 = 4915200$
unpooling2: $5*5*640*512 = 8192000$
local: $768*640 = 491520$
local_score: $640*2 = 1280$
global: $5*5*512*128 + 5*5*128*128 + 3*3*128*128 = 2195456$
global_score = $128*2 = 256$

totally:

$38592 + 221184 + 1474560 + 5898240 + 7077888 + 73728 + 147456 + 294912 + 589824$
 $+ 589824 + 819200 + 2457600 + 4915200 + 8192000 + 491520 + 1280 + 2195456 + 256$
 $= 35478720$

DSS:

conv_1:
 $h*w*64*3*3*3 + h*w*64*3*3*64 + h*w*64 = 38656*h*w$

conv_2:

$h/2*w/2*128*3*3*64 + h/2*w/2*128*3*3*128 + h/2*w/2*128 = 55328*h*w$

conv_3:

$$h/4*w/4*256*3*3*128 + h/4*w/4*256*3*3*256*2 + h/4*w/4*256 = 92176*h*w$$

conv_4:

$$h/8*w/8*512*3*3*256 + h/8*w/8*512*3*3*512*2 + h/8*w/8*512 = 92168*h*w$$

conv_5:

$$h/16*w/16*512*3*3*512*3 + h/16*w/16*512 = 27650*h*w$$

Conv1_2:

$$h*w*128*3*3*64 + h*w*128*3*3*128 + h*w*1*1*128 = 221312*h*w$$

conv2_2:

$$h/2*w/2*128*3*3*128 + h/2*w/2*128*3*3*128 + h/2*w/2*1*1*128 = 73760*h*w$$

Conv3_3:

$$h/4*w/4*256*5*5*256 + h/4*w/4*256*5*5*256 + h/4*w/4*1*1*256 = 204816*h*w$$

conv4_3:

$$h/8*w/8*256*5*5*512 + h/8*w/8*256*5*5*256 + h/8*w/8*1*1*256 = 76804*h*w$$

conv5_3:

$$h/16*w/16*512*5*5*512 + h/16*w/16*512*5*5*512 + h/16*w/16*1*1*512 = 51202*h*w$$

pool5:

$$h/32*w/32*512*7*7*512 + h/32*w/32*512*7*7*512 + h/32*w/32*1*1*512 = 25088*h*w$$

Short connection:

$$\text{conv4_3: } h/8*w/8*3$$

$$\text{conv3_3: } h/4*w/4*3$$

$$\text{conv2_2: } h/2*w/2*5$$

$$\text{conv1_2: } h*w*5$$

Totally:

$$38656 + 55328 + 92176 + 92168 + 27650 + 221312 + 73760 + 204816 + 76804 + 51202 + 25088 + 6.484375 = 984054.484375*h*w$$

参数量:

$$\text{conv1: } 3*3*3*64 + 3*3*64*64 = 38592$$

$$\text{conv2: } 3*3*64*128 + 3*3*128*128 = 221184$$

$$\text{conv3: } 3*3*128*256 + 3*3*256*256 + 3*3*256*256 = 1474560$$

$$\text{conv4: } 3*3*256*512 + 3*3*512*512 + 3*3*512*512 = 5898240$$

$$\text{conv5: } 3*3*512*512 + 3*3*512*512 + 3*3*512*512 = 7077888$$

$$\text{conv1_2: } 3*3*64*128 + 3*3*128*128 + 1*1*128*1 = 221312$$

$$\text{conv2_2: } 3*3*128*128 + 3*3*128*128 + 1*1*128*1 = 295040$$

$$\text{conv3_3: } 5*5*256*256 + 5*5*256*256 + 1*1*256*1 = 3277056$$

$$\text{conv4_3: } 5*5*512*256 + 5*5*256*256 + 1*1*256*1 = 4915456$$

$$\text{conv5_3: } 5*5*512*512 + 5*5*512*512 + 1*1*512*1 = 13107712$$

$$\text{pool5: } 7*7*512*512 + 7*7*512*512 + 1*1*512*1 = 25690624$$

short connection:

conv4_3: $1*1*3*1 = 3$

conv3_3: $1*1*3*1 = 3$

conv2_2: $1*1*5*1 = 5$

conv1_2: $1*1*5*1 = 5$

totally:

$38592 + 221184 + 1474560 + 5898240 + 7077888 + 221312 + 295040 + 3277056 +$
 $4915456 + 13107712 + 25690624 + 3 + 3 + 5 + 5 = 62217680$