- VGG (Visual Geometry Group)
  Very Deep Convolutional Networks For Large-Scale Image Recognition

- 亮点：①通过堆叠多个3×3的卷积核来替代大尺度卷积核（减少所需参数）
  ②论文中提到，可以通过堆叠两个3×3的卷积核替代5×5的卷积核，堆叠三个3×3的卷积核替代7×7的卷积核

  ⇒ 拥有相同的感受野

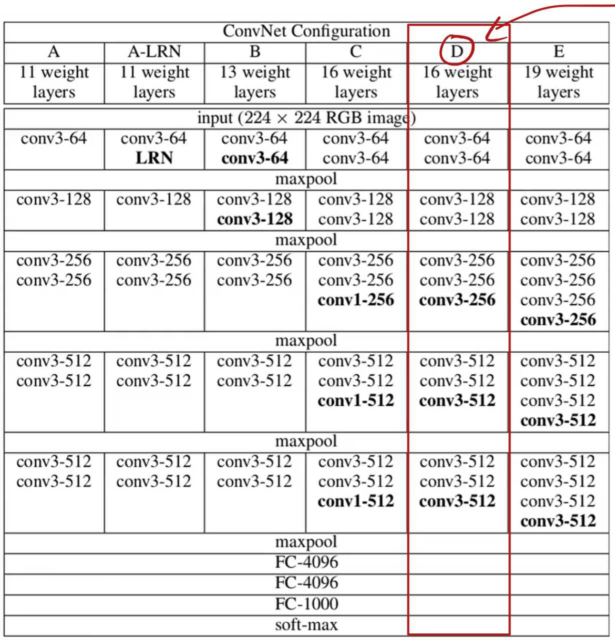
Feature map: F=1
Conv3×3 (3): F=(1-1)×1+3=3
Conv 3×3 (2): F=(3-1)×1+3=5
Conv 3×3 (1): F=(5-1)×1+3=7

#所需参数 <Input channel = C>
$7\times7\times C\times C=49C^2$
$3\times3\times C\times C+3\times3\times C\times C+3\times3\times C\times C=27C^2$

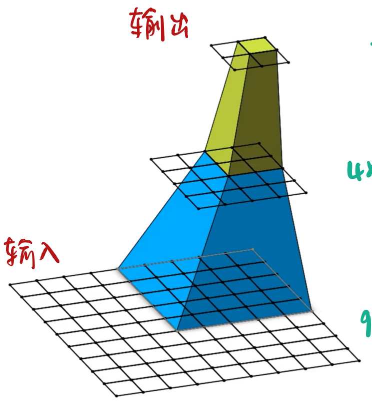
receptive field

决定某一层输出结果中一个元素所对应的输入层的区域大小.
<输出 feature map 上的一个单元对应输入层上区域的大小>

一般使用D



ConvNet Configuration					
A	A-LRN	B	C	D	E
11 weight layers	11 weight layers	13 weight layers	16 weight layers	16 weight layers	19 weight layers
input (224 × 224 RGB image)					
conv3-64	conv3-64 **LRN**	conv3-64 **conv3-64**	conv3-64 conv3-64	conv3-64 conv3-64	conv3-64 conv3-64
maxpool					
conv3-128	conv3-128	conv3-128 **conv3-128**	conv3-128 conv3-128	conv3-128 conv3-128	conv3-128 conv3-128
maxpool					
conv3-256 conv3-256	conv3-256 conv3-256	conv3-256 conv3-256	conv3-256 conv3-256 **conv1-256**	conv3-256 conv3-256 **conv3-256**	conv3-256 conv3-256 conv3-256 **conv3-256**
maxpool					
conv3-512 conv3-512	conv3-512 conv3-512	conv3-512 conv3-512	conv3-512 conv3-512 **conv1-512**	conv3-512 conv3-512 **conv3-512**	conv3-512 conv3-512 conv3-512 **conv3-512**
maxpool					
conv3-512 conv3-512	conv3-512 conv3-512	conv3-512 conv3-512	conv3-512 conv3-512 **conv1-512**	conv3-512 conv3-512 **conv3-512**	conv3-512 conv3-512 conv3-512 **conv3-512**
maxpool					
FC-4096					
FC-4096					
FC-1000					
soft-max					



2×2×1
⇑
Max Pool 1
Size: 2×2
Stride: 2

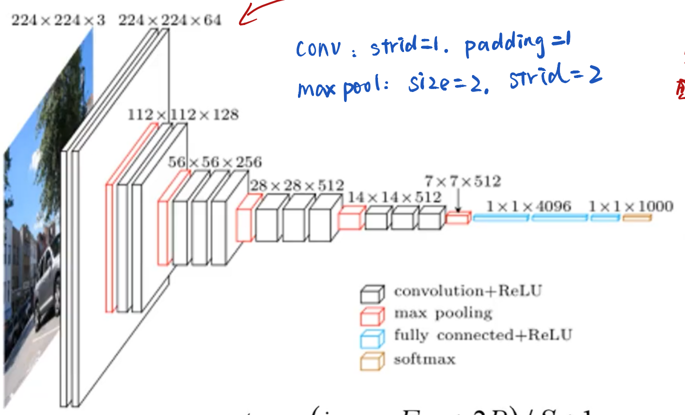
4×4×1
⇑
Conv 1
Size: 3×3
Stride=2

9×9×1

$out_{size}=(in_{size}-F_{size}+2P)/S+1$

$F(i)=(F(i+1)-1)\times Stride+Ksize$
↑ 第i层感受野
↑ kernal size

eg. Feature map: F=1
Pool1: F=(1-1)×2+2=2
Conv1: F=(2-1)×2+3=5



conv: strid=1, padding=1
max pool: size=2, strid=2

$$out_{size}=(in_{size}-F_{size}+2P)/S+1$$