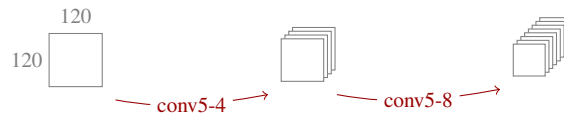


Consider a convolutional neural network (activation not drawn)



used for grayscale images of size  $120 \times 120$  pixels. We follow the convention from VGG19 paper, meaning that conv5-4 uses  $5 \times 5$  kernels and has 4 channels. Unlike VGG19, we do not use spatial padding of the input, and output is restricted to voxels where kernel lies entirely within the image.

1. What is the size (total number of neurons) of the output of the network?
2. How many learnable parameters are there in all? Remember to consider the biases.
3. We add max pooling and downscaling over a  $2 \times 2$  window after each of the convolutional layers. What is the size of the output now?

Submit your answers in a text file with the first three lines formatted as below:

```
output_size: 55
nr_parameters: 55
pooling_effect: 55
display_name: AndersAnd
```