**Atrous Convolution**

**An Introduction to different Types of Convolutions in Deep Learning**

(Reference: <https://towardsdatascience.com/types-of-convolutions-in-deep-learning-717013397f4d>)

**Convolutions**

**Shape

Description automatically generatedKernel Size**: 3x3

A common choice for 2D is 3 – that is 3x3 pixels.

**Stride**: 1

While its default is usually 1, we can use a strid of 2 for down sampling and image similar to MaxPooling.

**Padding**: 1

A (half) padded convolution will keep the spatial output dimensions equal to the input.

Whereas unpadded convolutions will crop away some of the borders if the kernel is larger than 1

**Input & Output Channels**:

A convolutional layer takes a certain number of Input Channels (I) and Output Channels (O).

The needed parameters for such a layer can be calculated by I\*O\*K, where K equals the number of values in the kernel.

**Dilated Convolutions** (a.k.a. atrous convolutions)

**A picture containing businesscard

Description automatically generatedDilation rate**: 2

A spacing between the values in a kernel.

For example, A 3x3 kernel with a dilation rate of 2 will have the same field of view as a 5x5 kernel, while only using 9 parameters.

This delivers a wider field of view at the same computational cost.

Particularly popular in the field of real-time segmentation.