1 Convolutional Networks

This is a post written for the AI Helsinki study group *Image and Video Statistics*. It is based on the Chapter 9 of the book *Deep Learning*.

1.1 Definition

1.2 Use of Convolutional Networks

1.3 Benefits

1.4 Examples

1.5 Sparse Connectivity

1.6 Growing Receptive Fields

1.7 Parameter Sharing

1.8 Convolutional Network Components

1.9 Max Pooling

Pictures: Without Shift, Shifted

1.10 Example of Learned Invariances

1.11 Pooling with Down Sampling

1.12 Examples of Architectures

1.13 Convolution with Strides

1.14 Zero Pading Enables Deeper Networks

1.15 Comparison of Local Connections, Convolution, and Full Connections

Pictures: Local, Convolution, FC

1.16 Partial Connectivity Between Channels

1.17 Tiled Convolution

Pictures: Local Connection, Tiled Convolution, Traditional Convolution