

Deep Learning: Theory and Practice

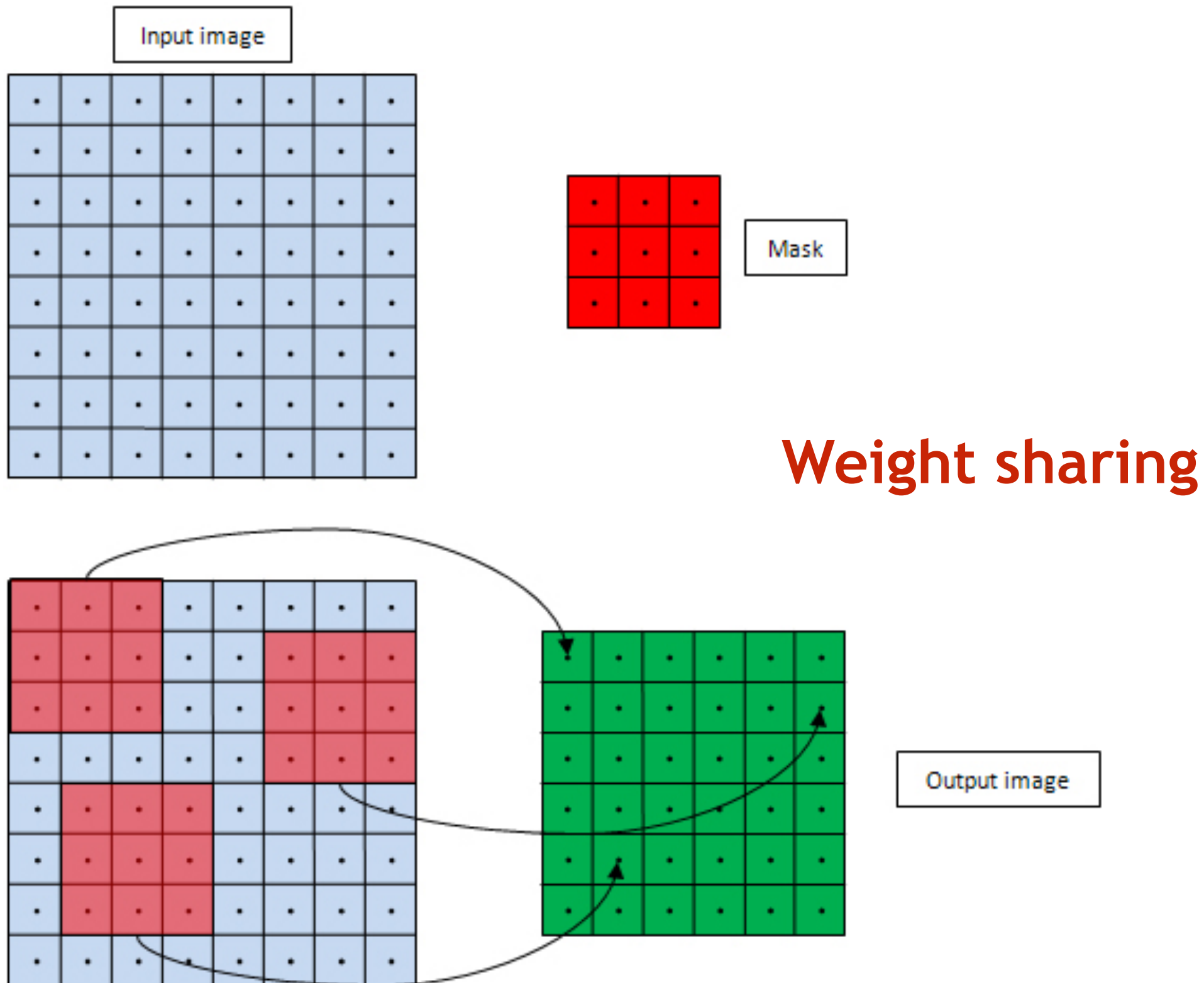
Convolutional and Recurrent Neural Networks

22-03-2018

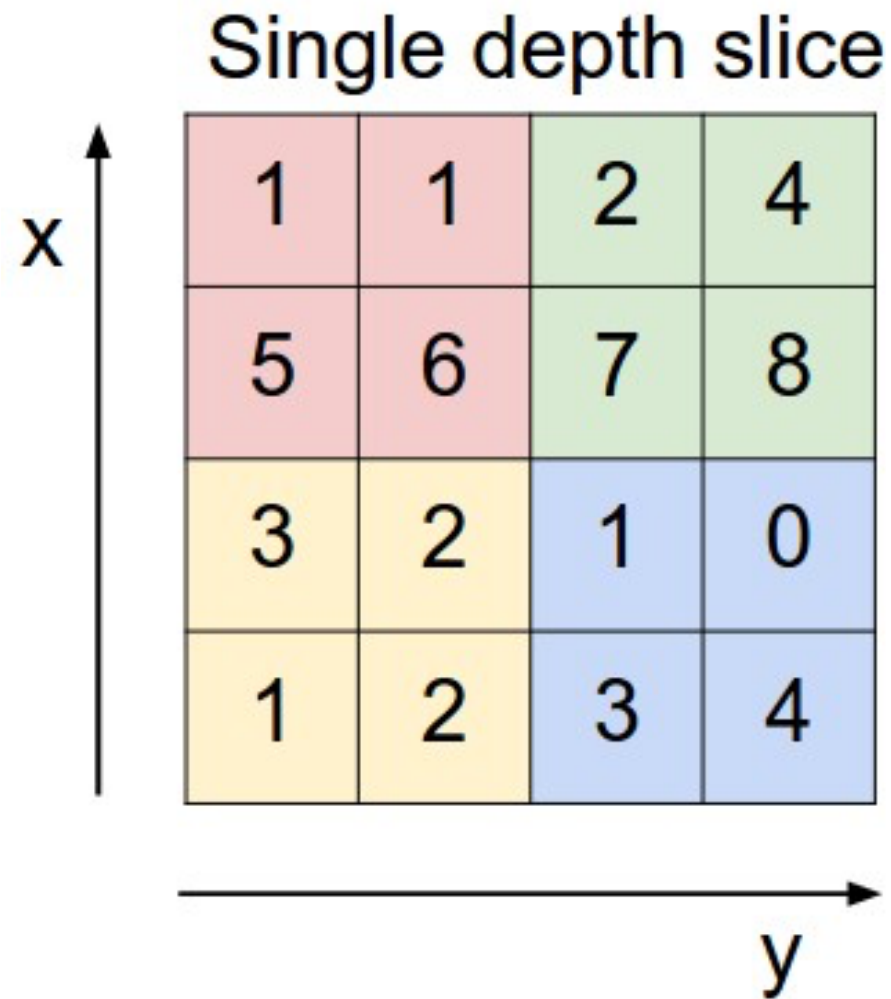
deeplearning.cce2018@gmail.com



Other Architectures - Convolution Operation



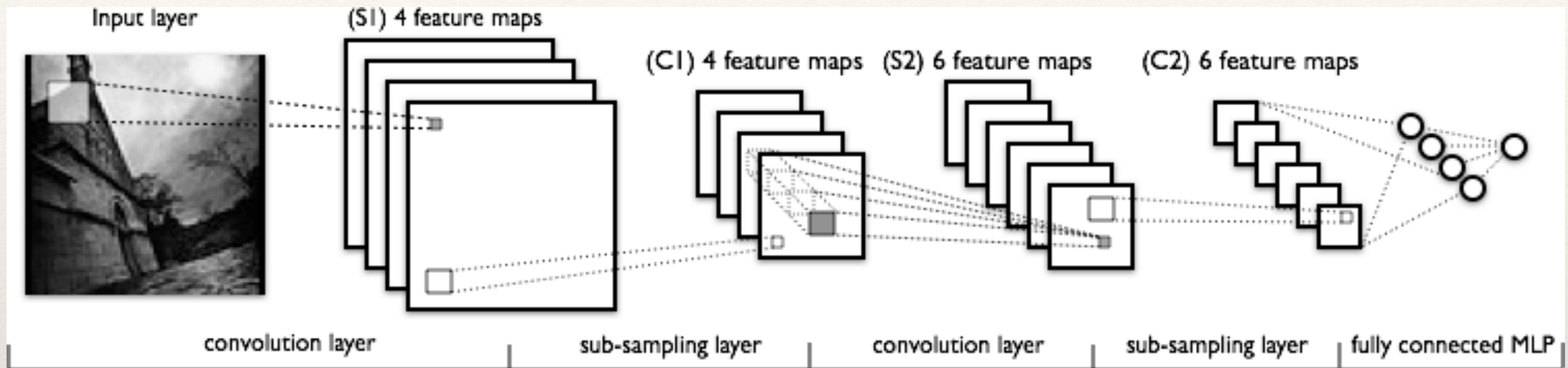
Max Pooling Operation



max pool with 2x2 filters
and stride 2

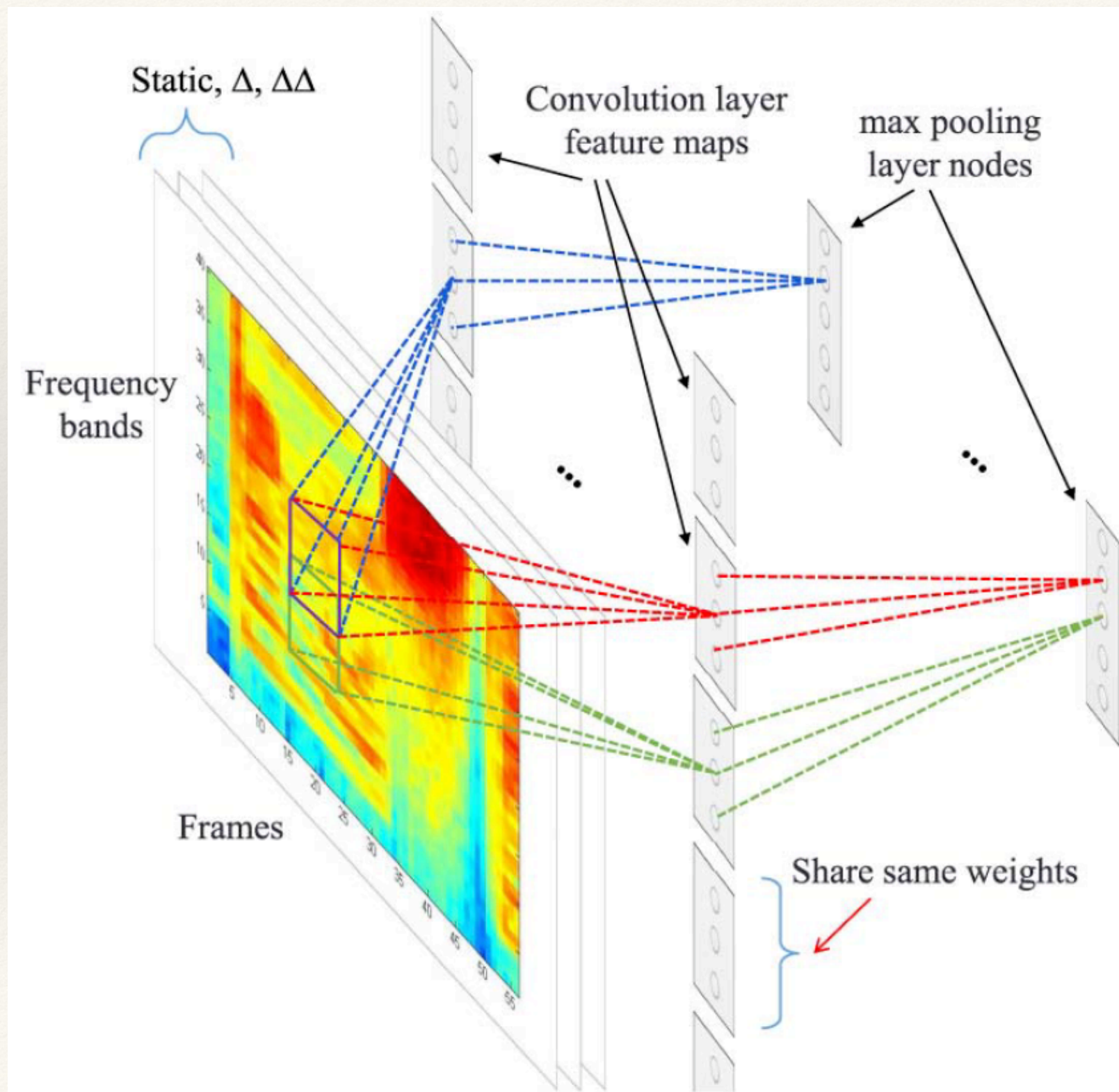


Convolutional Neural Networks



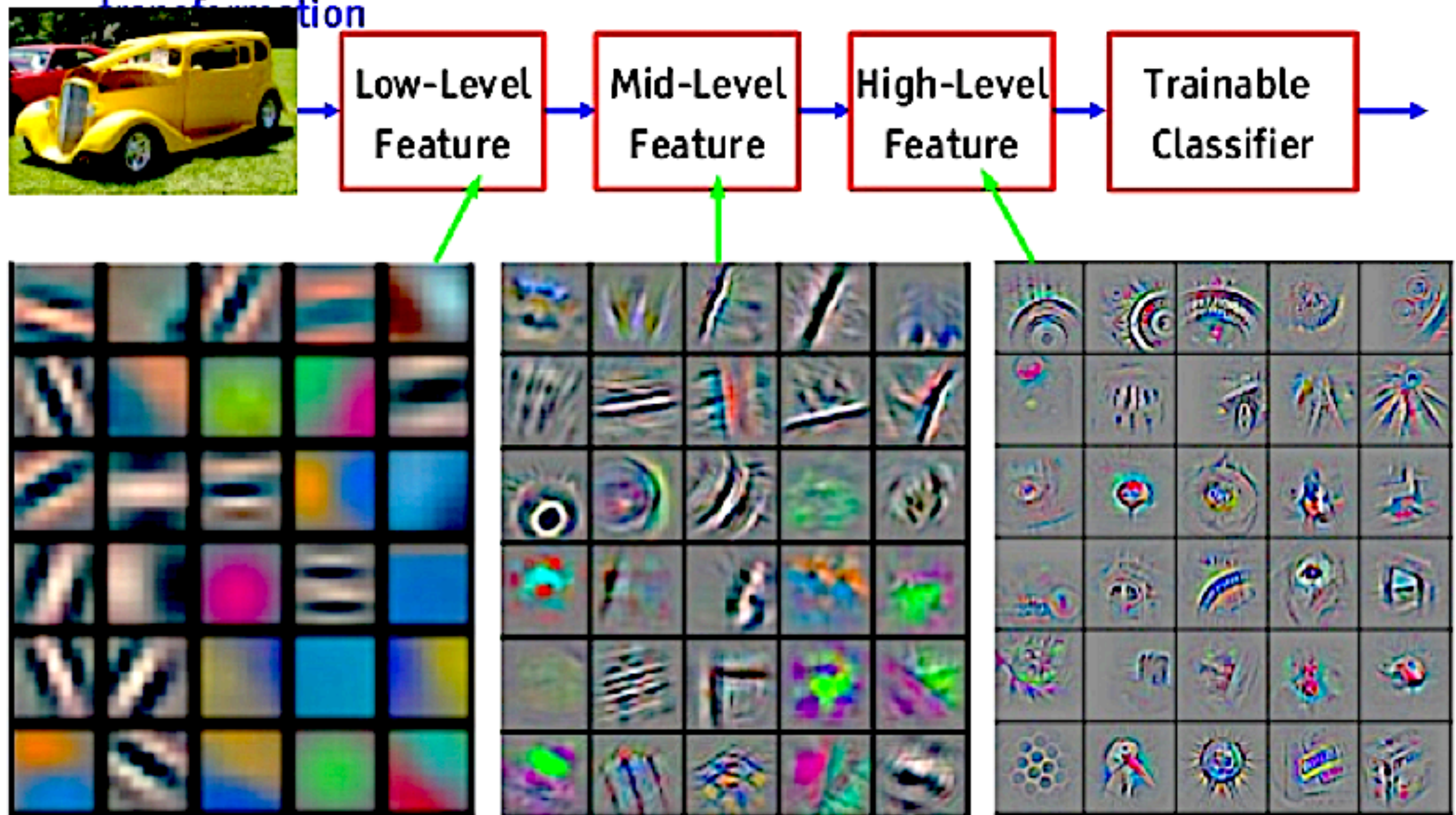
- Multiple levels of filtering and subsampling operations.
- Feature maps are generated at every layer.

CNNs for Speech and Audio



Representation Learning in CNNs

■ It's **deep** if it has more than one stage of non-linear feature transformation



Feature visualization of convolutional net trained on ImageNet from [Zeiler & Fergus 2013]