

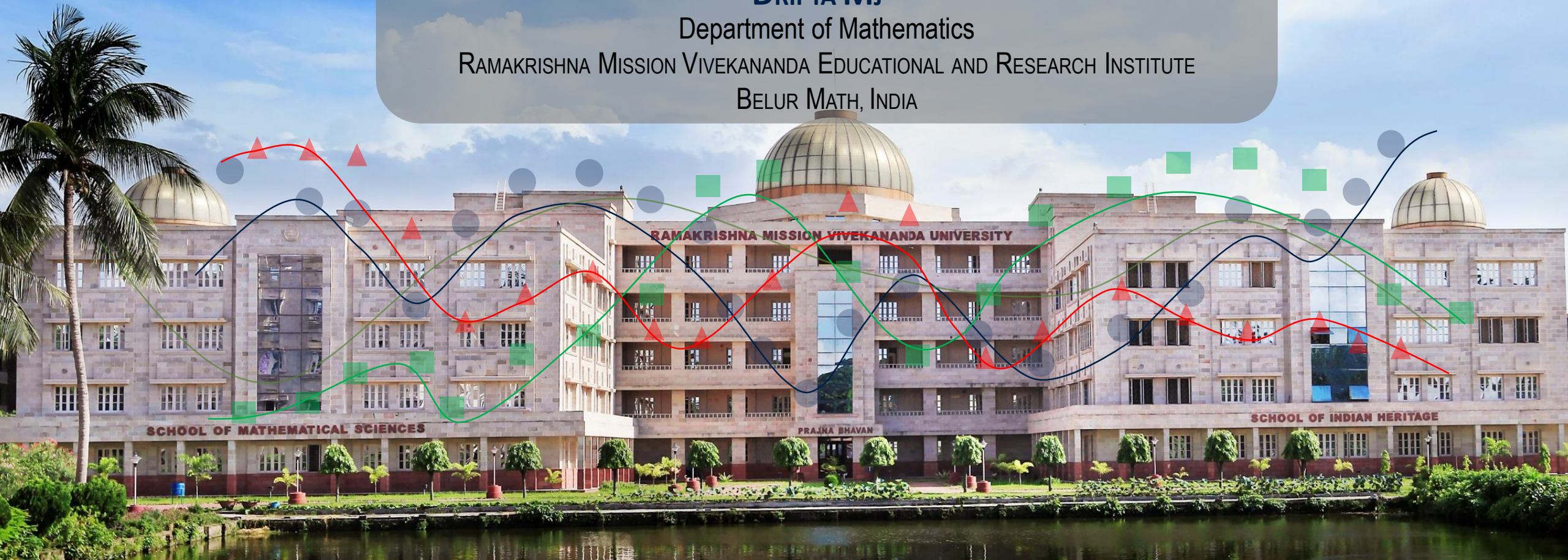
Upsampling techniques

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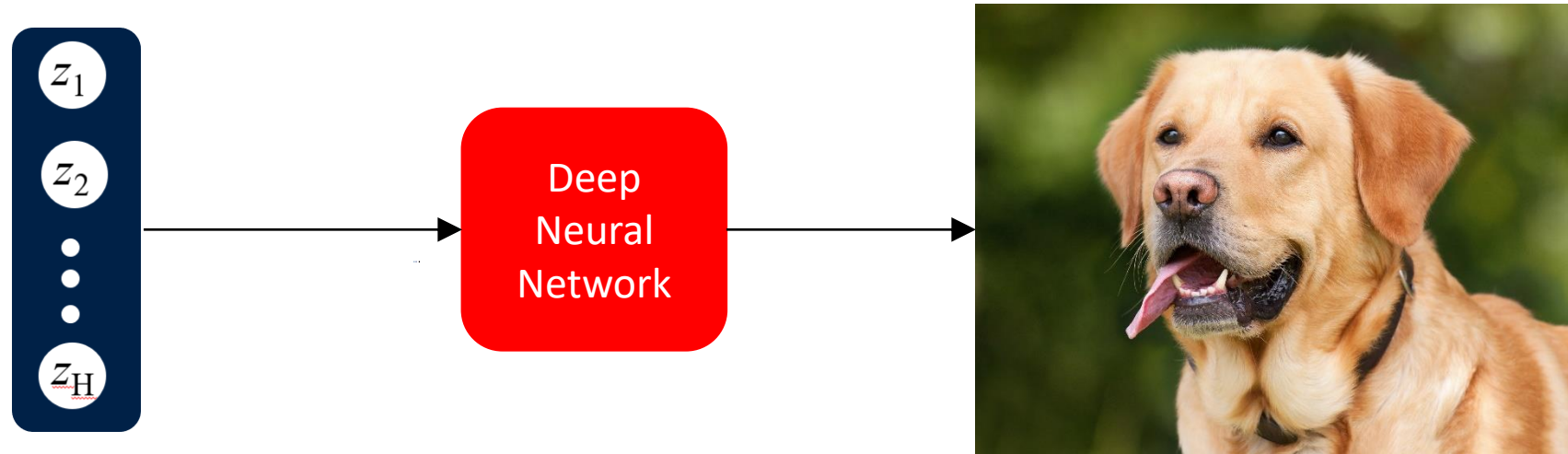
RAMAKRISHNA MISSION VIVEKANANDA EDUCATIONAL AND RESEARCH INSTITUTE

BELUR MATH, INDIA



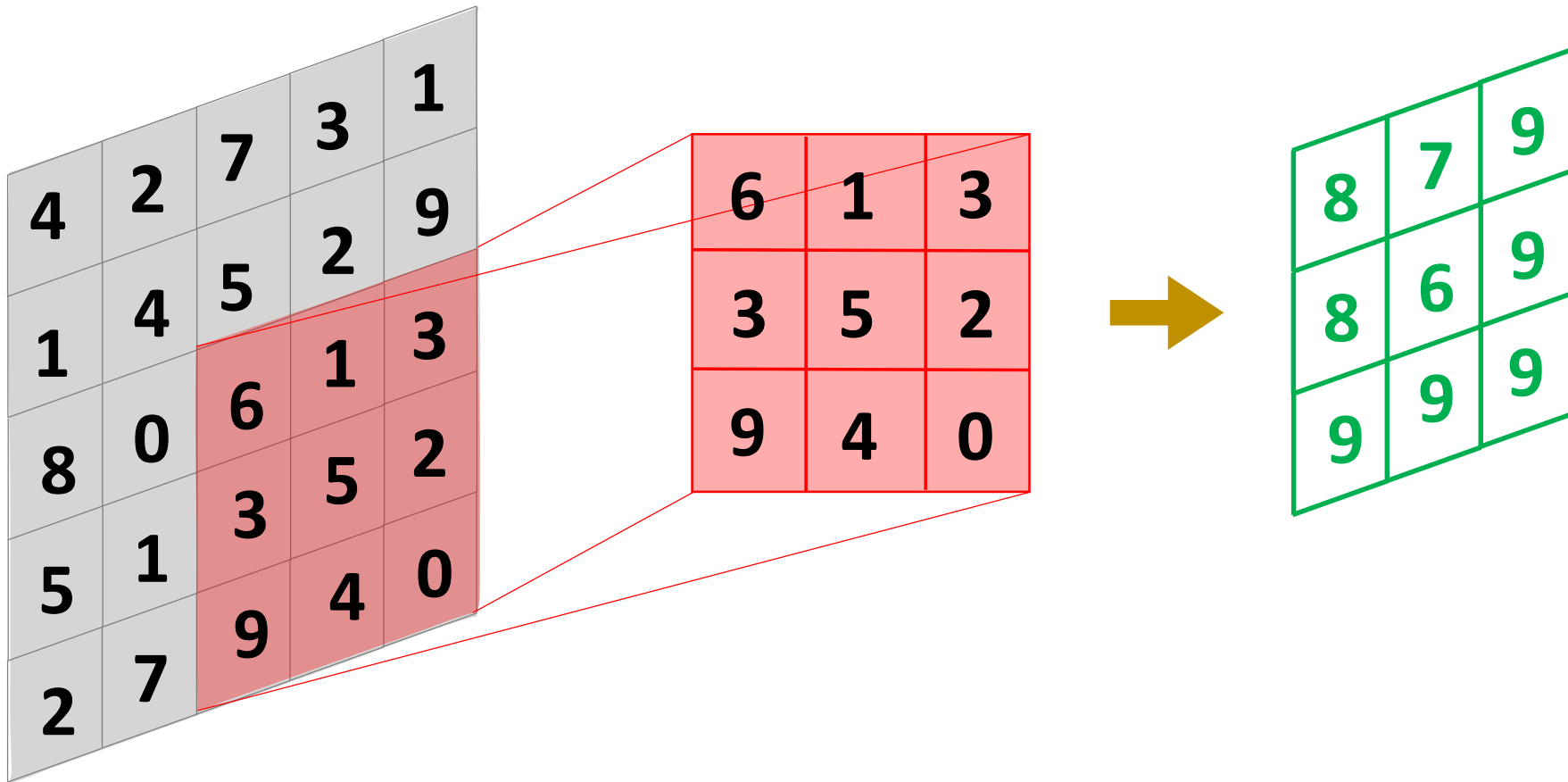
Introduction

- Generative models, in particular those producing new images, need to upsample i.e., dimension of the output is greater than that of the input.



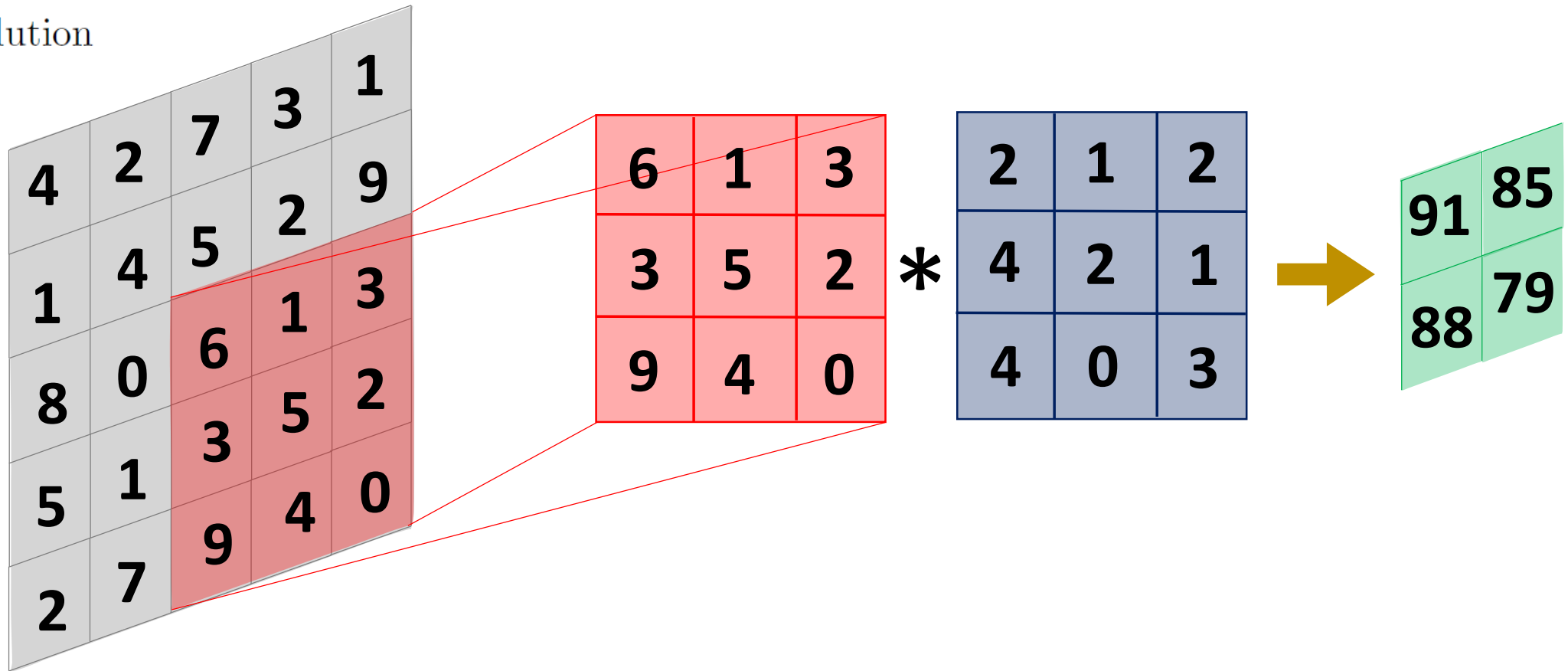
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 - Strided convolution

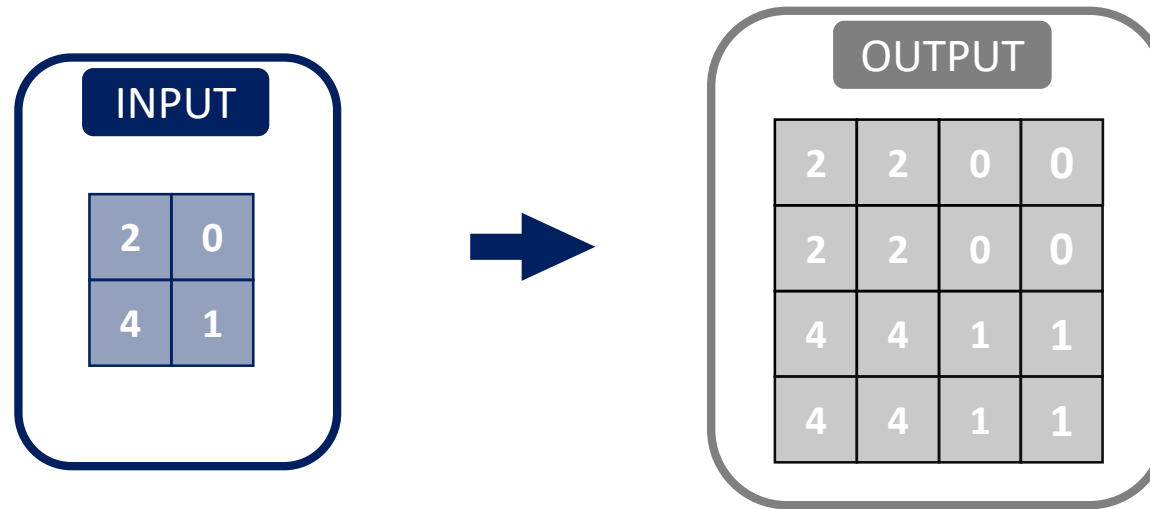


Introduction

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 - Pooling
 - Strided convolution
- Want strategies to increase the size of the feature map in the network.
- Unpooling – opposite pooling layer

Upsampling

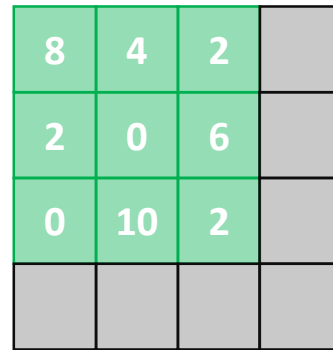
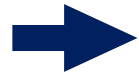
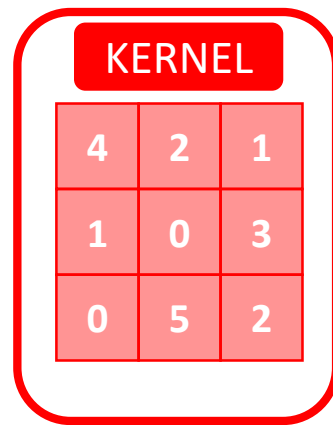
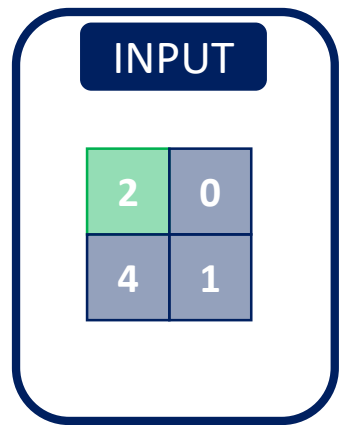
- Nearest neighbouring unpooling
 - Duplicate input values in the receptive field of the unpooling region.



Transpose convolution

- Learnable upsampling
 - Learn kernel for performing the upsampling.
- Also known as
 - Fractionally strided convolution
 - Upconvolution
 - Deconvolution (This is **wrong!**)
- Output contains copies of the kernel weighted by the values in the input.
 - For any overlapping region, the output is the sum of the weighted entries.

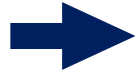
Transpose convolution



Transpose convolution

INPUT	
2	0
4	1

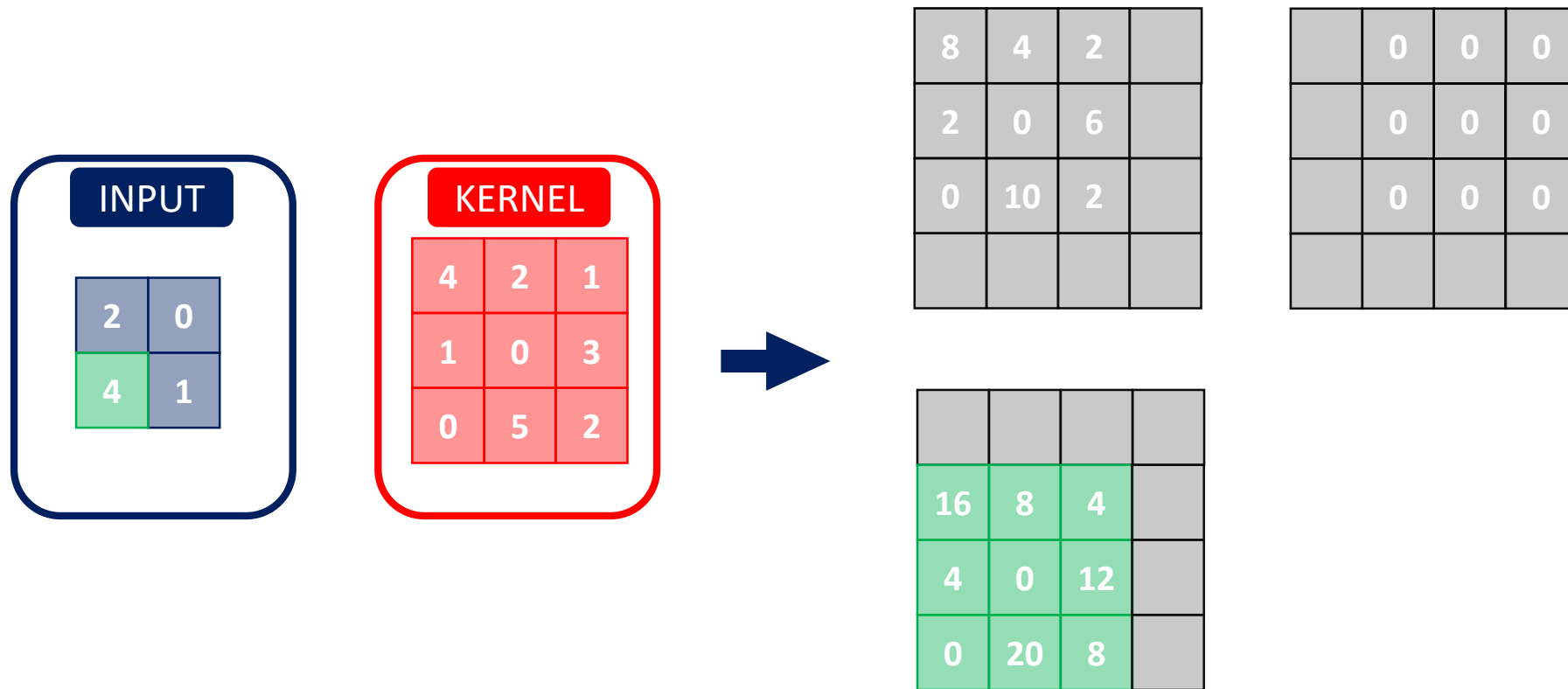
KERNEL		
4	2	1
1	0	3
0	5	2



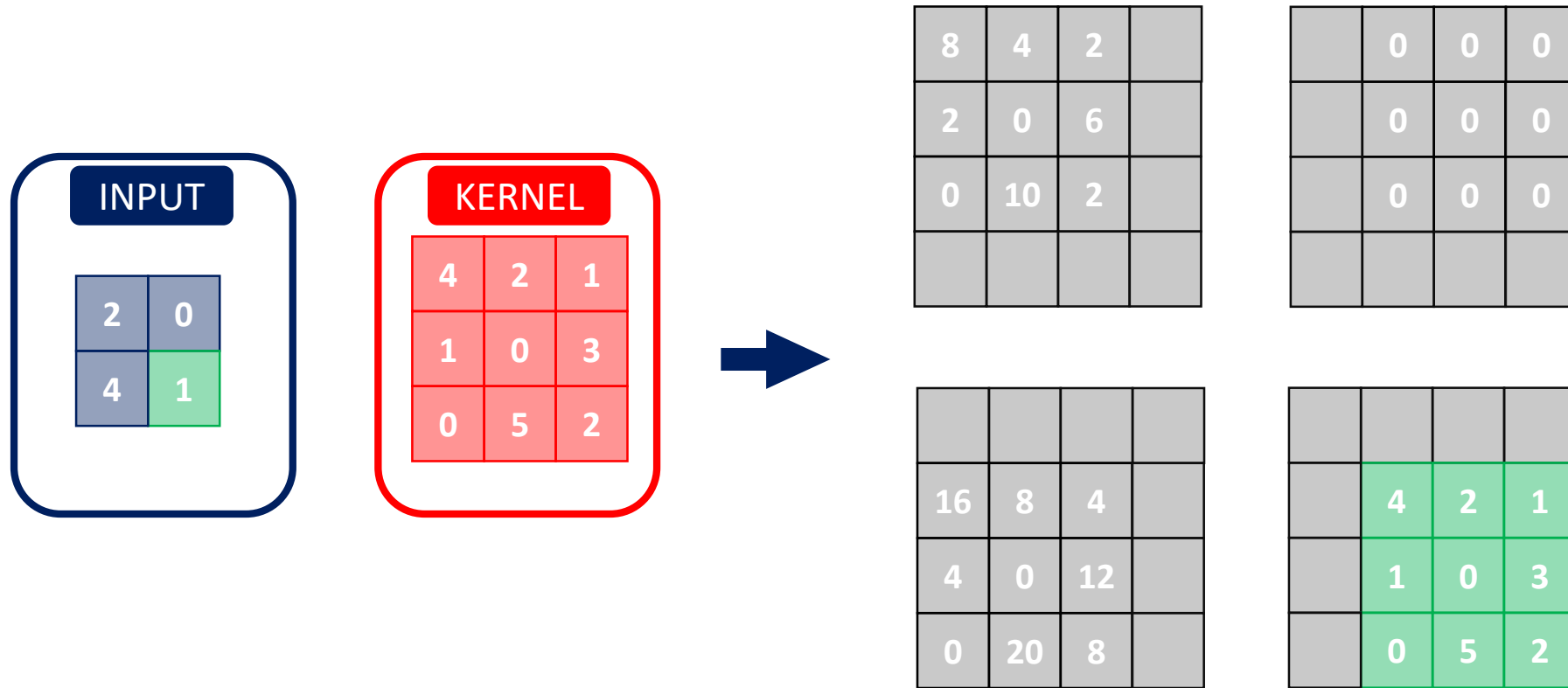
8	4	2	
2	0	6	
0	10	2	

	0	0	0
	0	0	0
	0	0	0

Transpose convolution



Transpose convolution



Transpose convolution

