# ConvNet Lab for DD2427

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## 1 ConvNet building blocks

### 1.1 Convolution

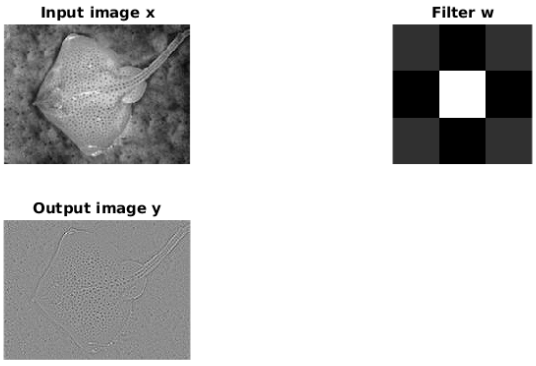


Figure 1: Gradient magnitude for different methods

**Question 1: If H x W is the size of the input image, H′ x W′ the size of the filter, what is the size H″ x W″ of the output image? Why?** Different strategies apply giving different results. If only using the valid part of the image, no zero-padding, the resulting size is H″=H-(H′-1) x W″=W-(W′-1)

because the value cannot be computed in the edges as there is no value to use when applying the kernel.

**Question 2: The filter w given above is a discretized Laplacian operator. Which type of visual structures (corners, bars, ...) do you think may excite this filter the most?** It will excite the most the edges, colour level discontinuities in the image.

**Task 1: Suggest a way that you can make the output size be same as the input image size? Apply your suggestion using vl_nnconv.** Using zero padding around the image so the image edges have values around it that allow to compute the operation. y = vl_nnconv(x, w, [],'Pad',1) ; Adds padding around the pixels of the input image before operating.