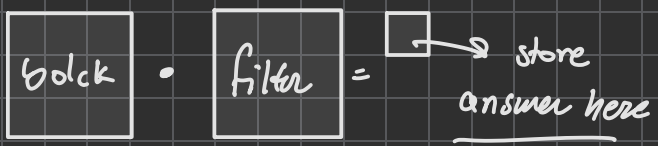
# Convolutional neural networks//

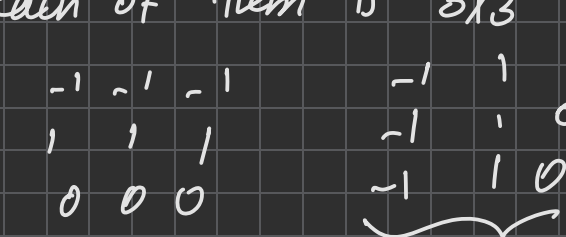
- can detect pattern in images using several convolutional layers. (using the filters)
- pattern: could be edges / corners / circles / squares depending on the filter.
- a filter is a small matrix we decide, & initialized w / random layers.
- the filter slides over each 3x3 block of pixels in the image

Sliding = convolving

- the dot product of the block and the filter will be computed & stored




- let's say our conv. layer has 4 filters. each of them is 3x3




top horizontal edge det.

left vertical edge detection

⇒ filters like mox are basic & usually utilized in the beggining of our network.

⇒ ones after that might pick up on more complex things like corners, shapes, circles. The next-level could be faces, objects, and animals.

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Example of conv. neural network

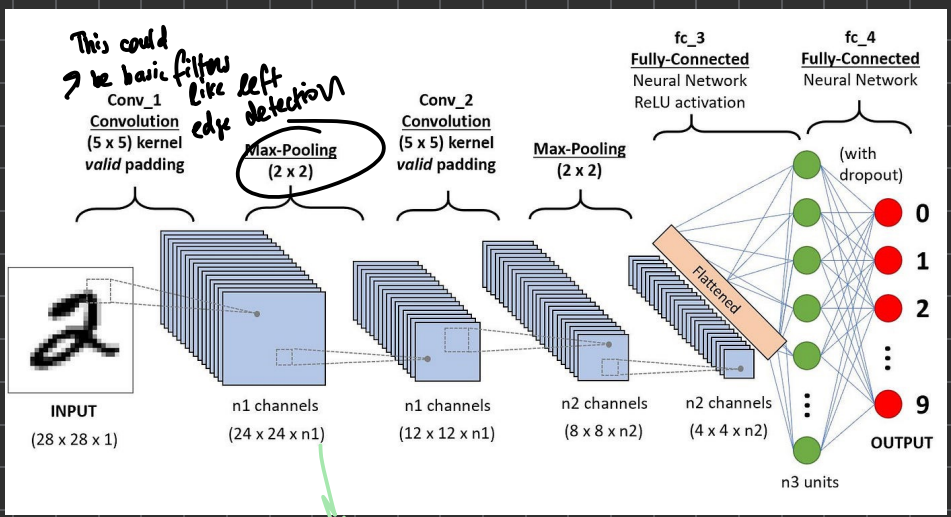


image source ↙

https://towardsdatascience.com/a-comprehensive-guide-to-convolutional-neural-networks-the-eli5-way-3bd2b1164a53

pooling is done to each feature map individually

then either

↳ average pooling (for each subregion avg value)

↳ max pooling (for each subregion max value)