

ReLU layer

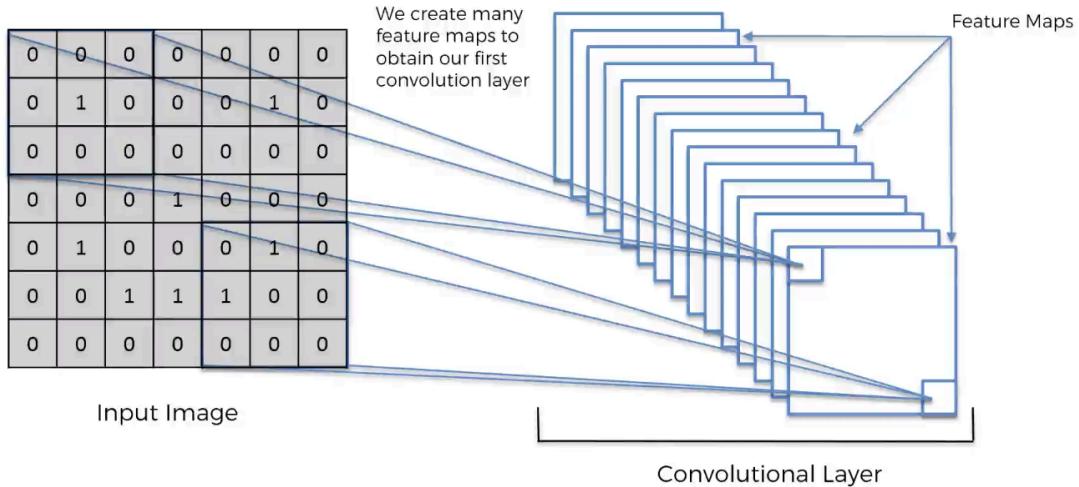


Step 1(B) - ReLU Layer

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Step 1(B) - ReLU Layer

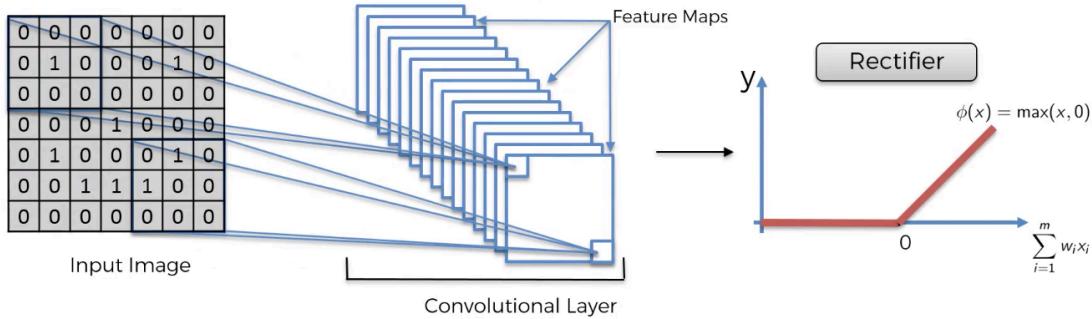


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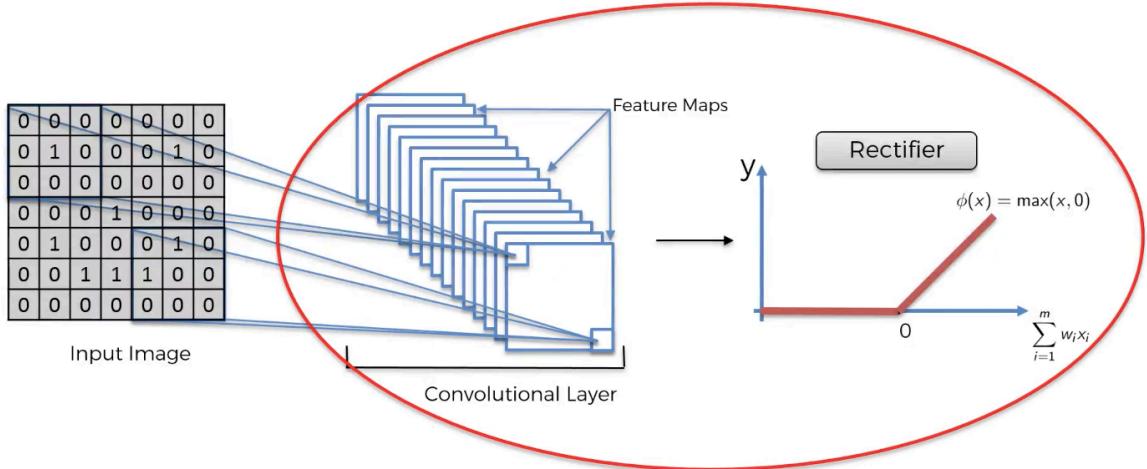
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Step 1(B) - ReLU Layer



The reason why we are applying the rectifier is because we want to increase non-linearity in our image or in our CNN. Rectifier access that filter or function which breaks up the linearity.

The reason we prioritizing the non-linearity is because the images are highly non-linear.

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Image Source: http://mlss.tuebingen.mpg.de/2015/slides/fergus/Fergus_1.pdf

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This is our original image.

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Black = negative; white = positive values

Image Source: http://mlss.tuebingen.mpg.de/2015/slides/fergus/Fergus_1.pdf

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After applying a feature detector.

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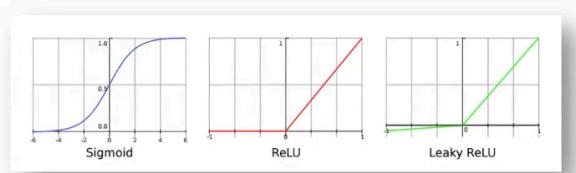
what the rectifier does is to remove all the black. Anything below zero turn into a zero. This picture is more non-linear than the previous picture.

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Additional Reading:

Understanding Convolutional Neural Networks with A Mathematical Model

By C.-C. Jay Kuo (2016)



Link:

<https://arxiv.org/pdf/1609.04112.pdf>

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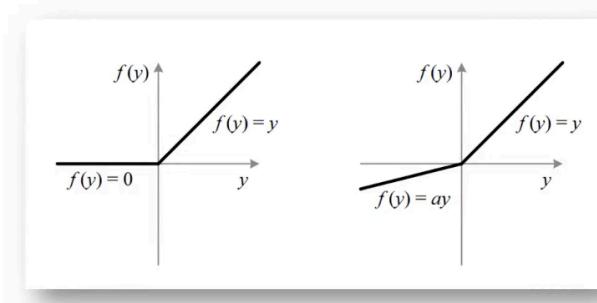
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Additional Reading:

*Delving Deep into Rectifiers:
Surpassing Human-Level
Performance on ImageNet
Classification*

By Kaiming He et al. (2015)



Link:

<https://arxiv.org/pdf/1502.01852.pdf>