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Deep Learning

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Homework 3



* The learnable parameters are the weights and biases that this model learns. This layer has 3 biases because of the number of its filters and 3(channels) x (5x5) (filter size) x 3 (filters) = 225 weights. This layer has as learnable parameters 3 biases and 225 weights.
* Since we want a fully connected layer, we won’t need a filter. However, to replicate the same behavior and attain the same end, we’ll need a fully connected network with 228 parameters; that is the sum of all learnable parameters for the convolutional layer described in the prompt.

1. Since the shape we want to detect lies along the diagonal, we’ll need our filter to activate the image along the diagonal. For that, we can have one convolutional layer with two filters; the two filters being the fixed filters provided in 1 a. We can repeat the same convolution operation until the image output image is equal to the filter size (7x7) or smaller. Then, if the values that lie along the diagonal are all the same then we’ve found a match otherwise we haven’t.