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CNN Performance

The convolutional neural network used is 3-layer combination of ReLU and max pooling with adam as optimizer. ReLU, a nonlinear function allowing complex relationships in the data to be learned, was used since it also acts like a linear function allowing the use stochastic gradient descent with [backpropagation of errors](https://machinelearningmastery.com/implement-backpropagation-algorithm-scratch-python/) to train deep neural networks which needs a linear like activation function. Maxpooling was also used since progressively reduce the spatial size of the representation to reduce the amount of parameters and computation in the network.

MLP Performance

Using smaller number of neuron resulted to very small accuracy for both validation and test dataset. Using too many neurons aside from very slow run time resulted to overfitting (very small test accuracy compared to validation accuracy)

MLP vs CNN Performance

Test accuracy: MLP = 47.3%, CNN = 73.4%. Convolutions are [translation invariant](https://stats.stackexchange.com/questions/208936/what-is-translation-invariance-in-computer-vision-and-convolutional-netral-netwo) which makes it especially well suited for processing images. However, evident from a lower test accuracy than validation accuracies, CNN seems to slightly overfit.