Why CNN for Image Classification?

Using an ANN for the purpose of image classification would end up being very costly in terms of computation since the trainable parameters become extremely large.

For example, if we have a 50 X 50 image of a cat, and we want to train our traditional ANN on that image to classify it into a dog or a cat the trainable parameters become –  
(50\*50) \* 100 image pixels multiplied by hidden layer + 100 bias + 2 \* 100 output neurons + 2 bias = 2,50,302.

Convolutional Neural Networks come under the subdomain of Machine Learning which is Deep Learning. It was proposed by computer scientist ***Yann LeCun*** in the late 90s, when he was inspired from the human visual perception of recognizing things.

Construct CNN convolution layer follows a hierarchical model which works on building a network, like a funnel, and finally gives out a fully-connected layer where all the neurons are connected to each other and the output is processed.



A convolution network is a multilayer feedforward network that has two- or three-dimensional inputs. It has weight functions that are not generally viewed as matrix multiplication (or inner product) operations, The principal layer type for convolution networks is the

convolution layer.

Diagram

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Model definition and building network:

Step 1: Choose a Dataset

Step 2: Prepare Dataset for Training

Step 3: Create Training Data

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Step 4: Create Validation Data

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Step 5: Images Augmentation:

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Step 5: Optimizer Scheduler:

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