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Convolutional Neural Networks

Source: https://www.youtube.com/watch?v=Jy9-aGMB_TE&t=300s

1. Intro to CNN's

Before we can understand CNN's, you should already understand Artifical Neural Networks, because CNN's are just added onto that concept.

A CNN, Convolutional Neural Network, or sometimes referred to as "ConvNet", is a feed forward neural network that is generally used to analyze visual ements (like images or videos), by processing data with a grid like topology (an array of matrices)

Break down of the above statement

1. **"Feed Forward" Neural Network** is where "connections between the nodes do not form cycles. This characteristic differentiates it from recurrent neural networks (RNNs). The network consists of an input layer, one or more hidden layers, and an output layer. Information flows in one direction—from input to output—hence the name "feedforward."" (GeeksforGeeks, https://www.geeksforgeeks.org/feedforward-neural-network/)
2. **"with a grid like topology"** means that we break the image down into a pixel by pixel matrix with a value, usually between 0 and 1. If you do not know what a matrix is, it is a mathematical grid of values that represent data, and you should be familiar with certain matrix operations like matrix arithmatic, dot product, cross product, vector multiplication, etc. (basically first year)

SIDE STEP (MATRICIESAND CONVOLUTION OPERATION USING 2 MATRICIES a & b of 1 dimension)

A = [5,3,7,5,9,7]
B = [1,2,3]

Multiply the arrays element wise

A = [5,3,7,5,9,7]
B = [1,2,3]

A*B = [5,6,