ASSIGNMENT

(Machine Learning)

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2**) What is Stride, Padding & Pooling? Explain with an example.**

**Stride**

Stride is **a component of convolutional neural networks, or neural networks tuned for the compression of images and video data**. Stride is a parameter of the neural network's filter that modifies the amount of movement over the image or video.

For example, **if a neural network's stride is set to 1, the filter will move one pixel, or unit, at a time**.

**Padding**

Padding is a term relevant to convolutional neural networks as it refers to the amount of pixels added to an image when it is being processed by the kernel of a CNN.

For example, **if the padding in a CNN is set to zero, then every pixel value that is added will be of value zero**.

**Pooling**

Pooling **involves selecting a pooling operation, much like a filter to be applied to feature maps**. The size of the pooling operation or filter is smaller than the size of the feature map; specifically, it is almost always 2×2 pixels applied with a stride of 2 pixels.

**4) What is overfitting? How to overcome overfitting in an ML model?**

Overfitting happens **when a model learns the detail and noise in the training data to the extent that it negatively impacts the performance of the model on new data**. This means that the noise or random fluctuations in the training data is picked up and learned as concepts by the model.

**Handling over-fitting**

1. Reduce the network's capacity by removing layers or reducing the number of elements in the hidden layers.
2. Apply regularization, which comes down to adding a cost to the loss function for large weights.
3. Use Dropout layers, which will randomly remove certain features by setting them to zero.