**ASSIGNMENT 5 ( PART 2)**

**Question 1: What is Stride, Padding & Pooling? Explain with an example.**

Answer:

To build a CNN model: Stride, Padding and Pooling are three important processes.

1. Stride: Stride is the way by which the computer reads an image. It is basically a way to move the filter over the image to get imformation. For eg: if value of stride is 2, then it means that the system will read only 2 pixels at a time, the filter will advance by 2 pixels at each step
2. Padding: Padding describes the number of empty pixels that will surround the image to preserve the original size of an image. It enables the processing of edge pixels. Since we need to resize the image when processing it, so in order to avoid lossy-decomposition, we use Padding.
3. Pooling: The Pooling operation involves sliding a 2-dimensional filter over each channel of feature map and summarizing the features lying within the region covered by the filter. For eg: when doing handwritten digit classification, the digits 1, 4, 7 have straight lines, so pooling is done to cover the line feature, then 2, 3,5, 6, 8, 9 all have curves, so another layer is created to identify curves, and so on.

**Question 2: What is overfitting? How to overcome overfitting in an ML model?**

Answer:

When a model is trained with too much data, it starts learning from the noise also and stores a lot of details that are unnecessary. When the particular model is tested on the test set, it results in high variance, hence producing inaccurate predictions. This is known as overfitting of the model.

To overcome overfitting:

1. Increase Training Data
2. Reduce the complexity of the model
3. Early stopping of training
4. Removing some Characteristics/Features.