**Assignment\_6**

1.What is the difference between TRAINABLE and NON-TRAINABLE PARAMETERS?

**Ans: 'Trainable parameters' are those which value is modified according to their gradient (the derivative of the error/loss/cost relative to the parameter), whereas 'non-trainable parameters' are those which value is not optimized according to their gradient**.

2. In the CNN architecture, where does the DROPOUT LAYER go?

**Ans: Dropout can be used after convolutional layers (e.g. Conv2D) and after pooling layers (e.g. MaxPooling2D). Often, dropout is only used after the pooling layers, but this is just a rough heuristic. In this case, dropout is applied to each element or cell within the feature maps.**

3. What is the optimal number of hidden layers to stack?

**Ans: The number of hidden neurons should be 2/3 the size of the input layer, plus the size of the output layer. The number of hidden neurons should be less than twice the size of the input layer**.

4. In each layer, how many secret units or filters should there be?

**Ans: The number of hidden neurons should be between the size of the input layer and the size of the output layer. The number of hidden neurons should be 2/3 the size of the input layer, plus the size of the output layer. The number of hidden neurons should be less than twice the size of the input layer.**

5. What should your initial learning rate be?

**Ans: A traditional default value for the learning rate is 0.1 or 0.01, and this may represent a good starting point on your problem**.

6. What do you do with the activation function?

**Ans: An Activation Function decides whether a neuron should be activated or not. This means that it will decide whether the neuron's input to the network is important or not in the process of prediction using simpler mathematical operations**

7. What is NORMALIZATION OF DATA?

**Ans: Normalization is the process of organizing data in a database. This includes creating tables and establishing relationships between those tables according to rules designed both to protect the data and to make the database more flexible by eliminating redundancy and inconsistent dependency.**

8. What is IMAGE AUGMENTATION and how does it work?

**Ans: Image augmentation is a technique of altering the existing data to create some more data for the model training process. In other words, it is the process of artificially expanding the available dataset for training a deep learning model.**

9. What is DECLINE IN LEARNING RATE?

Ans: Perhaps the simplest learning rate schedule is to decrease the learning rate linearly from a large initial value to a small value. This **allows large weight changes in the beginning of the learning process and small changes or fine-tuning towards the end of the learning process**.

10. What does EARLY STOPPING CRITERIA mean?

**Ans: Early stopping is a method that allows you to specify an arbitrary large number of training epochs and stop training once the model performance stops improving on a hold out validation dataset. In this tutorial, you will discover the Keras API for adding early stopping to overfit deep learning neural network models.**