Deep Learning with Tensorflow

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Answers:

1. What will happen if the pooling operations are not done in convolution neural network?

A.
   I. In case if pooling operations are not done, The distorted feature may not be captured.
   II. We won't be able to preserve important preserve that are represented by max. numbers in convolution matrix.
   III. The feature size will be very high.
   IV. There will be many parameters needed to be trained.
   V. Training will take much time.

2. What is the use of applying "softmax" in final layer of deep neural network and describe about how the values are changing after applying "softmax"?

A.
   I. This logistic function can be generalized to output a multiclass categorical probability distribution by the Softmax Function.
   II. After applying Softmax, Softmax brings the values of probability in final o/p layer between 0 & 1.
   III. Also,Softmax is used to add probabilities of all the classes to 1 in o/p layer.
   IV. Otherwise, there can be higher probabilities for 2 or more classes instead of just 1.
   V. The softmax funcion uses cross entropy as a loss function.

3. What is the purpose of backpropagation in neural network?

A.
   I. The goal of backpropagation is to optimize the weights so that the neural network can learn how to correctly map arbitrary inputs to outputs.
   II. Back Propogation is used to adjust all weights simultaneously.
   III. This will help reduce error in the final o/p layer.
   IV. Back Propogation is applied for finite num. of epochs until the error is minimal.
   V. Learning rate is used to update weights and move cost function to it's global minima.

4. When will you use convolution neural network and when will you use recurrent neural network?

A.

    I.   CNNs are ideal for images and videos processing.
    II.   CNNs are especially good at problems like image classification.
    III.   RNN is good for sequential,series or cyclic data
    IV.   RNNs are ideal for text and speech analysis.
    V.   RNNs are used a lot in problems related to forecasting.

5. Write down atleast 5 differences between traditional neural network, convolution neural network and recurrent neural network.

A.

    I.   ANN can be used for classification as well as regression problems,CNN can be used for Image or Text classification and RNN is good for sequential,series or cyclic data
    II.   ANN is a neural network that has multiple hidden layers, each passing their outputs to either another hidden layer or an output activation function.
    III.   CNN is meant to understand and learn features in a unstructured data like images using multiple layers called Feature Maps.
    IV.   CNN takes a fixed size inputs and generates fixed-size outputs while RNN can handle arbitrary input/output lengths.
    V.   CNN is a type of feed-forward artificial neural network but RNN unlike feedforward neural networks - can use their internal memory to process arbitrary sequences of inputs.