

1. Using our own terms and diagrams, explain INCEPTIONNET ARCHITECTURE.

Ans. An inception network is a deep neural network with an architectural design that consists of repeating components referred to as Inception modules. As mentioned earlier, this article focuses on the technical details of the inception module.

2. Describe the Inception block.

Ans. An Inception Module is an image model block that aims to approximate an optimal local sparse structure in a CNN. Put simply, it allows for us to use multiple types of filter size, instead of being restricted to a single filter size, in a single image block, which we then concatenate and pass onto the next layer.

3. What is the DIMENSIONALITY REDUCTION LAYER (1 LAYER CONVOLUTIONAL)?

Ans. Convolution operates on two signals (in 1D) or two images (in 2D): you can think of one as the "input" signal (or image), and the other (called the kernel) as a "filter" on the input image, producing an output image (so convolution takes two images as input and produces a third as output).

4. THE IMPACT OF REDUCING DIMENSIONALITY ON NETWORK PERFORMANCE

Ans. It may lead to some amount of data loss. PCA tends to find linear correlations between variables, which is sometimes undesirable. PCA fails in cases where mean and covariance are not enough to define datasets.

5. Mention three components. Style GoogLeNet

Ans. Auxiliary Classifier

Before bringing the exploration of the GoogLeNet architecture to a close, there's one more component that was implemented by the creators of the network to regularise and prevent overfitting. This additional component is known as an Auxiliary Classifier.

6. Using our own terms and diagrams, explain RESNET ARCHITECTURE.

Ans. ResNet, which was proposed in 2015 by researchers at Microsoft Research introduced a new architecture called Residual Network. Residual Block: In order to solve the problem of the vanishing/exploding gradient, this architecture introduced the concept called Residual Network.

7. What do Skip Connections entail?

Ans. Skip Connections (or Shortcut Connections) as the name suggests skips some of the layers in the neural network and feeds the output of one layer as the input to the next layers. Skip Connections were introduced to solve different problems in different architectures.

8. What is the definition of a residual Block?

Ans. A residual block is a stack of layers set in such a way that the output of a layer is taken and added to another layer deeper in the block. The non-linearity is then applied after adding it together with the output of the corresponding layer in the main path.

9. How can transfer learning help with problems?

Ans. Transfer learning is a technique to help solve this problem. As a concept, it works by transferring as much knowledge as possible from an existing model to a new model designed for a similar task. For example, transferring the more general aspects of a model which make up the main processes for completing a task.

10. What is transfer learning, and how does it work?

Ans. transfer learning is a machine learning method where we reuse a pre-trained model as the starting point for a model on a new task. To put it simply—a model trained on one task is repurposed on a second, related task as an optimization that allows rapid progress when modeling the second task.

11. HOW DO NEURAL NETWORKS LEARN FEATURES?

Ans. Neural networks work by propagating forward inputs, weights and biases. However, it's the reverse process of backpropagation where the network actually learns by determining the exact changes to make to weights and biases to produce an accurate result.

12. WHY IS FINE-TUNING BETTER THAN START-UP TRAINING?

Ans. Pre-trained models (instead of training the model from scratch) achieve better performance with less training data. Language model pre-training uses self-supervision, which doesn't require any training data. Fine-tuning, on the other hand, is used to make endpoint adjustments to enhance performance.