1)How would you describe tensorflow in an short sentence ? What are its main function ? Can you name other popular deep learning libraries ?

Ans :TensorFlow is a Python-friendly open source library for numerical computation that makes machine learning and developing neural networks faster and easier.

Function : TensorFlow allows developers to create dataflow graphs—structures that describe how data moves through a graph, or a series of processing nodes. Each node in the graph represents a mathematical operation, and each connection or edge between nodes is a multidimensional data array, or tensor.

Libraries : 1.numpy,2.scipy,3.scikit learn,4.theano,5.tensorflow,6.keras,7.pytorch,8.pandas,9.matplotlib,10.beautiful soup,11.scrapy,12.seaborn,13.pycaret,14.opencv,15.caffe.

2)is tensorflow a drop-in-replacement for numpy ? What are the main difference between the two ?

Ans : NumPy and TensorFlow are actually very similar in many respects. Both are, essentially, array manipulation libraries, built around the concept of tensors.&

Tensorflow is consistently much slower than Numpy.

Main difference between the two is :

Tensorflow is a library for artificial intelligence,especially machine learning. Numpy is a library for doing numerical calculations.

3) do you get the same result with tf.range(10) and tf.constant(np.arange(10) )? Yes.we get same result.

4)can you name the six other data structures available in tensorflow,beyond regular Tensors?

Ans : There are four main tensor type you can create:

Variable.

constant.

placeholder.

SparseTensor.

The most common types of tensors are: 3D tensors: used in time series. 4D-Tensors: used with images. 5D tensioners: used with videos.

5)A custom loss function can be defined by writing a function or by subclassing the keras,losses.loss class.when would you use each option ?

Ans : A custom loss function can be created by defining a function that takes the true values and predicted values as required parameters. The function should return an array of losses. The function can then be passed the compile stage.

6)similarly a custom metric can be defined in a function or a subclass of keras,metrics,metric when would you use each option.

Ans : As mentioned in Keras docu. import keras.backend as K def mean\_pred(y\_true, y\_pred): return K.mean(y\_pred) model. ...

Or you can implement it in a hacky way as mentioned in Keras GH issue. For that you need to use callbacks argument of model

7) when should you create a custom layer versus a custom model ?

Ans : If you are building a new model architecture using existing keras/tf layers then build a custom model. If you are implementing your own custom tensor operations with in a layer, then build a custom layer.

8) what are some use cases that require writing your own custom training loop ?

Ans : The training loop consists of repeatedly doing three tasks in order: Sending a batch of inputs through the model to generate outputs. Calculating the loss by comparing the outputs to the output.Using gradient tape to find the gradients. Optimizing the variables with those gradients

I would like to train a CNN using a custom training loop. However if there is a way that I can use my own gradient computation function instead of using the automatic differentiation provided by dlfeval(), modelGradients(), and gradient(), that are used with a dlnetwork(), which is used in custom training loops, versus an lgraph.

For example, in place of gradient(),

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9) can custom keras components contain arbitrary python code,or must they be Convertible to TF Function ?

Ans : Tf function provides the functionality of converting a python function automatically into a tensorflow graph which can then be executed efficiently by the tensorflow runtime.

tf\_train\_step = tf.function(train\_step)

%%time

train(train\_data, tf\_train\_step)

10) what are the main rules to respect if you want a function to be convertible to a TF function ?

11) when would you need to create a dynamic keras model ? How do you do that ? Why not make all yours models dynamic ?