

TensorFlow Basic Interview Questions

1. What is TensorFlow?

TensorFlow is the world's most used library for Machine Learning. Developed in 2015 by the Google Brain Team, it ensures to provide an easy-to-use low-level toolkit that can handle complex mathematical operations and learning architectures.

2. What are tensors?

Tensors are similar to arrays in programming languages, but here, they are of higher dimensions. It can be considered as a generalization of matrices that form an n-dimensional array. TensorFlow provides methods that can be used to create tensor functions and compute their derivatives easily. This is what sets tensors apart from the NumPy arrays.

3. What is the meaning of TensorBoard?

TensorBoard is a Graphical User Interface (GUI) that is provided by TensorFlow to help users visualize graphs, plots, and other metrics easily without having to write a lot of code. TensorBoard provides an ample number of advantages in terms of readability, ease of use, and performance metrics.

4. What are some of the advantages of using TensorFlow?

TensorFlow has numerous advantages, and this is why it is the most used framework for Machine Learning in the world. Some of its advantages are given below:

- Platform independency
- Usage of GPU for distributed computing

- Auto-differentiation capability
- Open-source and large community
- Highly customizable based on requirements
- Support for asynchronous computations

5. Are there any limitations to using TensorFlow?

Even though TensorFlow provides numerous advantages, it has one or two caveats in the current versions:

- No support for OpenCL (Open Computing Language) yet
- GPU memory conflicts when used with Theano
- Can be overwhelming for beginners to get started

6. What are the types of tensors available in TensorFlow?

There are three main types of tensors:

- Constant tensors
- Variable tensors
- Placeholder tensors

7. How can data be loaded into TensorFlow?

There are two ways that you can use to load data into TensorFlow before training **Machine Learning algorithms**:

- **Data load into memory:** Here, the data is loaded into the memory as a single array unit. It is the easiest way to load the data.
- **TensorFlow data pipeline:** It is making use of the built-in APIs to load the data and feed it across to the algorithm.

8. What is the simple working of an algorithm in TensorFlow?

There are five main steps that govern the working of the majority of algorithms in **TensorFlow**. They are as follows:

1. Data import or data generation, alongside setting up a data pipeline
2. Data input through computational graphs
3. Generation of the loss function to evaluate the output
4. Backpropagation to modify the data
5. Iterating until output criteria are met

9. What are the methods that can be used to handle overfitting in TensorFlow?

There are three methods, which can be used to easily handle the condition of overfitting when using TensorFlow:

- Batch normalization
- Regularization technique
- Dropouts

10. What are the languages that are supported in TensorFlow?

TensorFlow supports a wide variety of languages for programmers to write the code in. The preferred language presently is Python.

However, experimental support is being implemented for other languages, such as Go, Java, and C++. Also, language bindings for Ruby, Scala, and Julia are being developed by the open-source community.

11. What are placeholder tensors?

Placeholder tensors are entities that provide an advantage over a regular variable. It is used to assign data at a later point in time.

Placeholders can be used to build graphs without any prior data being present. This means that they do not require any sort of initialization for usage.

12. What are managers in TensorFlow?

TensorFlow managers are entities that are responsible for handling the following activities for servable objects:

- Loading
- Unloading
- Lookup
- Lifetime management

13. Where is TensorFlow mostly used?

TensorFlow is used in all of the domains that cover Machine Learning and Deep Learning. Being the most essential tool, the following are some of the main use cases of TensorFlow:

- Time series analysis
- Image recognition
- Voice recognition
- Video upscaling
- Test-based applications

14. What are TensorFlow servables?

Servables in TensorFlow are simply the objects that client machines use to perform computations. The size of these objects is flexible. Servables can include a variety of

information like any entity from a lookup table to a tuple needed for inference models.

15. How does the Python API work with TensorFlow?

Python is the primary language when it comes to working with TensorFlow.

TensorFlow provides ample number of functionalities when used with the API, such as:

- Automatic checkpoints
- Automatic logging
- Simple training distribution
- Queue-runner design methods

16. What are some of the APIs outside of the TensorFlow project?

Following are some of the APIs developed by Machine Learning enthusiasts across the globe:

- TFLearn: A popular Python package
- TensorLayer: For layering architecture support
- Pretty Tensor: Google's project providing a chaining interface
- Sonnet: Provides a modular approach to programming

17. What are TensorFlow loaders?

Loaders are used in TensorFlow to load, unload, and work with servable objects. The loaders are primarily used to add algorithms and data into TensorFlow for working.

The `load()` function is used to pre-load a model from a saved entity easily.

18. What makes TensorFlow advantageous over other libraries?

Following are some of the benefits of TensorFlow over other libraries:

- Pipelines: **data** is used to build efficient pipelines for text and image processing.
- Debugging: **tfdbg** is used to track the state and structure of objects for easy debugging.
- Visualization: TensorBoard provides an elegant user interface for users to visualize graphs.
- Scalability: It can scale Deep Learning applications and their associated infrastructure easily.

19. What are TensorFlow abstractions?

TensorFlow contains certain libraries used for abstraction such as Keras and TF-Slim. They are used to provide high-level access to data and model life cycle for programmers using TensorFlow. This can help them easily maintain clean code and also reduce the length of the code exponentially.

Next up on this top TensorFlow interview questions and answers post, we will take a look at the intermediate set of questions.