

## 2. Deep Learning – Libraries

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### 2. Deep Learning – Libraries

#### 1. Tensorflow

- ✓ Tensorflow is a deep learning framework
- ✓ This library was created by Google in the year of 2015 and it is open source.
- ✓ TensorFlow is the most famous deep learning library.
- ✓ It is entirely based on Python programming language and use for numerical computation and data flow, which makes machine learning faster and easier.
- ✓ TensorFlow is based on graph computation

#### Logo



#### Tensorflow installation

```
pip install tensorflow
```

#### Update

- ✓ Tensorflow 2<sup>nd</sup> version onwards keras library was in built
- ✓ So, we no need to install keras separately

### 2. Pytorch

- ✓ Pytorch is a deep learning framework
- ✓ Pytorch is a deep learning library created by Facebook in the year of 2016 and it is an open source

#### Logo



#### Note

- ✓ CNTK is another deep learning framework created by Microsoft but not that much popular compare to tensorflow and pytorch

### 3. Keras

- ✓ Keras is an open-source high-level Neural Network library, which was written in Python, is capable enough to run on Theano, TensorFlow, or CNTK.
- ✓ It was developed by one of the Google engineers, Francois Chollet.
- ✓ It is user-friendly, extensible, and faster experimentation with deep neural networks.
- ✓ It supports Convolutional Networks and Recurrent Networks individually also their combination.



### 4. Steps to create deep learning models with Keras

#### 4.1. Define your model.

- ✓ Create a Sequential model and add configured layers.

#### 4.2. Compile your model.

- ✓ Specify loss function and optimizers and call the compile() method on the model

#### 4.3. Fit your model.

- ✓ Train the model on a sample of data by calling the fit () method on the model.

#### 4.4. Make predictions

- ✓ Use the model to generate predictions on new data by calling the methods such as evaluate() or predict() on the model