ALTOROS™

About

TensorFlow

TensorFlow™ is an open source software library for numerical computation using data flow graphs. TensorFlow was originally developed for the purposes of conducting machine learning and deep neural networks research, but the system is general enough to be applicable in a wide variety of other domains as well.

Skflow

Scikit Flow provides a set of high level model classes that you can use to easily integrate with your existing Scikit-learn pipeline code. Scikit Flow is a simplified interface for TensorFlow, to get people started on predictive analytics and data mining. Scikit Flow has been merged into TensorFlow since version 0.8 and now called TensorFlow Learn.

Keras

Keras is a minimalist, highly modular neural networks library, written in Python and capable of running on top of either TensorFlow or Theano

Installation

How to install new package in Python:

```
pip install <package-name>
```

Example: `pip install requests`

How to install tensorflow?

device = **cpu/gpu**
python_version = **cp27/cp34**

```
sudo pip install
https://storage.googleapis.com/tensorflow/linux/$device/tensorflow-0.8.0-$python_version-none-linux_x86_64.whl
```

How to install Skflow

```
pip install sklearn
```

How to install Keras

```
pip install keras
```

update ~/.keras/keras.json - replace “theano” by “tensorflow”

Helpers

Python helper

Important functions

`type(object)`
Get object type

`help(object)`
Get help for object (list of available methods, attributes, signatures and so on)

`dir(object)`
Get list of object attributes (fields, functions)

`str(object)`
Transform an object to string

`object?`
Shows documentations about the object

`globals()`
Return the dictionary containing the current scope's global variables.

`locals()`
Update and return a dictionary containing the current scope's local variables.

`id(object)`
Return the identity of an object. This is guaranteed to be unique among simultaneously existing objects.

```
import __builtin__
dir(__builtin__)
```

Other built-in functions

TensorFlow

Main classes

```
tf.Graph()
tf.Operation()
tf.Tensor()
tf.Session()
```

Some useful functions

```
tf.get_default_session()
tf.get_default_graph()
tf.reset_default_graph()
ops.reset_default_graph()
tf.device(“/cpu:0”)
tf.name_scope(value)
tf.convert_to_tensor(value)
```

TensorFlow Optimizers

```
GradientDescentOptimizer
AdadeltaOptimizer
AdagradOptimizer
MomentumOptimizer
AdamOptimizer
FtrlOptimizer
RMSPropOptimizer
```

Reduction

```
reduce_sum
reduce_prod
reduce_min
reduce_max
reduce_mean
reduce_all
reduce_any
accumulate_n
```

Activation functions

`tf.nn?`

relu
relu6
elu
softplus
softsign
dropout
bias_add
sigmoid
tanh
sigmoid_cross_entropy_with_logits
softmax
log_softmax
softmax_cross_entropy_with_logits
sparse_softmax_cross_entropy_with_logits
weighted_cross_entropy_with_logits
etc.

Skflow

Main classes

TensorFlowClassifier
TensorFlowRegressor
TensorFlowDNNClassifier
TensorFlowDNNRegressor
TensorFlowLinearClassifier
TensorFlowLinearRegressor
TensorFlowRNNClassifier
TensorFlowRNNRegressor
TensorFlowEstimator

Each classifier and regressor have following fields
n_classes=0 (Regressor), n_classes are expected to be input (Classifiers)

batch_size=32,
steps=200, // except TensorFlowRNNClassifier - there is 50
optimizer='Adagrad',
learning_rate=0.1,