TensorFlow ™

Introduction

Let's get you up and running with TensorFlow!

But before we even get started, let's peek at what TensorFlow code looks like in the Python API, so you have a sense of where we're headed.

Here's a little Python program that makes up some data in two dimensions, and then fits a line to it.

```python
import tensorflow as tf
import numpy as np

# Create 100 phony x, y data points in NumPy, y = x * 0.1 + 0.3
x_data = np.random.rand(100).astype("float32")
y_data = x_data * 0.1 + 0.3

# Try to find values for W and b that compute y_data = W * x_data + b
# (We know that W should be 0.1 and b 0.3, but Tensorflow will
# figure that out for us.)
W = tf.Variable(tf.random_uniform([1], -1.0, 1.0))
b = tf.Variable(tf.zeros([1]))
y = W * x_data + b

# Minimize the mean squared errors.
loss = tf.reduce_mean(tf.square(y - y_data))
optimizer = tf.train.GradientDescentOptimizer(0.5)
train = optimizer.minimize(loss)

# Before starting, initialize the variables.  We will 'run' this first.
init = tf.initialize_all_variables()

# Launch the graph.
sess = tf.Session()
sess.run(init)

# Fit the line.
for step in xrange(201):
    sess.run(train)
    if step % 20 == 0:
```

```
        print(step, sess.run(W), sess.run(b))

# Learns best fit is W: [0.1], b: [0.3]
```

The first part of this code builds the data flow graph. TensorFlow does not actually run any computation until the session is created and the `run` function is called.

To whet your appetite further, we suggest you check out what a classical machine learning problem looks like in TensorFlow. In the land of neural networks the most "classic" classical problem is the MNIST handwritten digit classification. We offer two introductions here, one for machine learning newbies, and one for pros. If you've already trained dozens of MNIST models in other software packages, please take the red pill. If you've never even heard of MNIST, definitely take the blue pill. If you're somewhere in between, we suggest skimming blue, then red.
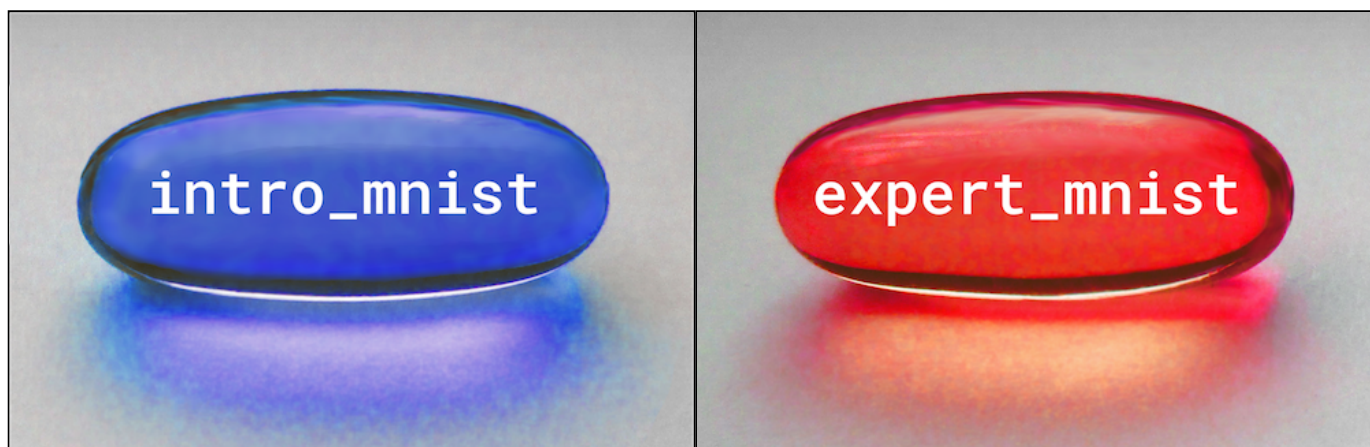
Images licensed CC BY-SA 4.0; original by W. Carter

If you're already sure you want to learn and install TensorFlow you can skip these and charge ahead. Don't worry, you'll still get to see MNIST -- we'll also use MNIST as an example in our technical tutorial where we elaborate on TensorFlow features.

Recommended Next Steps

- Download and Setup

- Basic Usage

- TensorFlow Mechanics 101