

Week 3-4 DL Frameworks - TF

笔记本: DL 2 - Deep NN Hyperparameter Tuning, Regularization & Optimization

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Deep learning frameworks

- Caffe/Caffe2
- CNTK
- DL4J
- Keras
- Lasagne
- mxnet
- PaddlePaddle
- TensorFlow
- Theano
- Torch

Choosing deep learning frameworks

- Ease of programming (development and deployment)
- Running speed
- - Truly open (open source with good governance)

TensorFlow

Code example

```
import numpy as np
import tensorflow as tf

coefficients = np.array([[1], [-20], [25]])

w = tf.Variable([0], dtype=tf.float32)
x = tf.placeholder(tf.float32, [3, 1])
cost = x[0][0]*w**2 + x[1][0]*w + x[2][0] # (w-5)**2
train = tf.train.GradientDescentOptimizer(0.01).minimize(cost)
init = tf.global_variables_initializer()

session = tf.Session()
session.run(init)
print(session.run(w))

for i in range(1000):
    session.run(train, feed_dict={x:coefficients})
print(session.run(w))
```



```
with tf.Session() as session:
    session.run(init)
    print(session.run(w))
```

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```
import numpy as np
```

```

import tensorflow as tf

coeff = np.array([[1.], [-20.], [100.]])

w = tf.Variable(0, dtype = tf.float32)
x = tf.placeholder(tf.float32, [3, 1])

cost = x[0][0] * w**2 + x[1][0] * w + x[2][0]
train = tf.train.GradientDescentOptimizer(0.01).minimize(cost)

init = tf.global_variables_initializer()
session = tf.Session()
session.run(init)
print(session.run(w))
# with tf.Session() as session:
#     session.run(init)
#     print(session.run(w))

session.run(train, feed_dict = {x:coeff})
print(session.run(w))

for i in range(1000):
    session.run(train, feed_dict = {x:coeff})
print(session.run(w))

```