deeplearning.ai

Programming Frameworks

TensorFlow

Motivating problem

Suppose $J(w) = w^2 - 20w + 25$

$= (w-5)^2$

& we want to find w that minimizes func

we can see Answer = 5

→ Do the same in TF

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))
```

will feed values for this later

dim(w) = list of size = 1

dim(x) = 3x1

we will replace x w/ coefficients value

J(w,b)

RMS or Adam

↳ α

↳ goal

we only provide fwd prop, TF has back prop built in based on what our cost func is

coefficients of $(w-5)^2$

4.9999 ≈ 5 → which is what minimizes J

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