Programming
Frameworks
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TensorFlow

deeplearning.ai

Motivating problem

$$J(\omega) = \boxed{\omega^2 - 10\omega + 25}$$

(cost)

$$\uparrow (\omega - 5)^2$$

$$\omega = 5$$

$$J(\omega, b)$$
$$\uparrow \quad \uparrow$$

Code example

```python
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))

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

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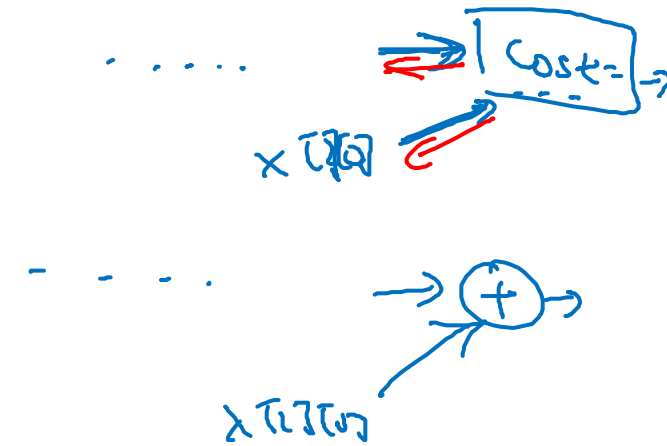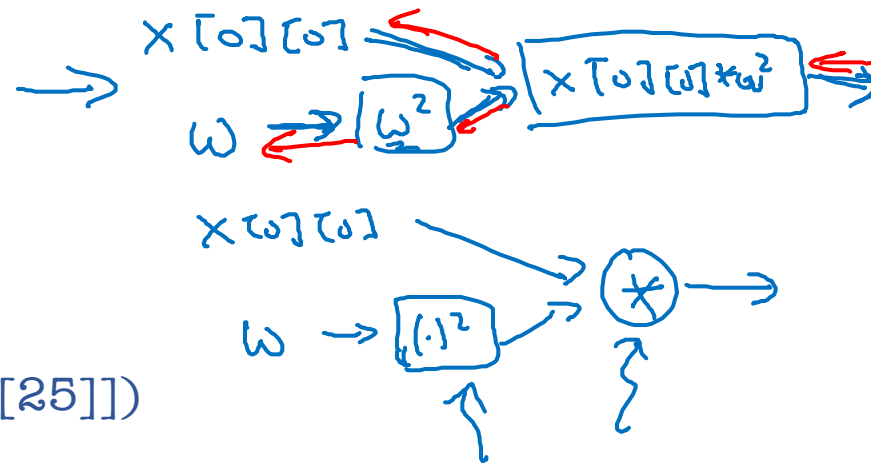
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