Programming Assignment: Tensorflow

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Deadline Pass this assignment by April 1, 11:59 PM PDT

← Assignment: Tensorflow

MW

Problem with Dropout implementation

Max Wang Assignment: Tensorflow · 5 days ago

I add the dropout in forward prop function , and add 'keep_prob' as a hyper-param.

```
def forward_propagation(X, parameters, keep_prob):

......

A1 = tf.nn.relu(Z1)

A1 = tf.nn.dropout(A1, keep_prob=keep_prob)

......
```

Then at the top level function "model", I train the model with keep_prob= 0.6.

```
def model(X_train, Y_train, X_test, Y_test, learning_rate = 0.0001,
          num_epochs = 1500, minibatch_size = 32, print_cost = True):
...
    # Forward propagation: Build the forward propagation in the tensorflow graph
    ### START CODE HERE ### (1 line)
    keep_prob = tf.placeholder(dtype = tf.float32)
    Z3 = forward_propagation(X, parameters, keep_prob)
...

                ### START CODE HERE ### (1 line)
                _ , minibatch_cost = sess.run([optimizer, cost], \
                                              feed_dict = {X:minibatch_X, Y
                                          :minibatch_Y, keep_prob:0.6})
                ### END CODE HERE ###
...
        print ("Train Accuracy:", accuracy.eval({X: X_train, Y: Y_train,
            keep_prob:0.6}))
        print ("Test Accuracy:", accuracy.eval({X: X_test, Y: Y_test, keep_prob
            :1.0}))

        return parameters
```

```
Cost after epoch 0: 1.871405
Cost after epoch 100: 1.846068
Cost after epoch 200: 1.846064
Cost after epoch 300: 1.846067
Cost after epoch 400: 1.846068
Cost after epoch 500: 1.846071
Cost after epoch 600: 1.846070
Cost after epoch 700: 1.846067
Cost after epoch 800: 1.846067
Cost after epoch 900: 1.846070
Cost after epoch 1000: 1.846062
Cost after epoch 1100: 1.846066
Cost after epoch 1200: 1.846070
Cost after epoch 1300: 1.846067
Cost after epoch 1400: 1.846072

Parameters have been trained!
Train Accuracy: 0.166667
Test Accuracy: 0.0
```

But the result is totally wrong. I search the implementation of dropout in Google, but find nothing helps.

Did I miss something? How could I debug the Model?

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Yide Zou Mentor · 4 days ago

Hello Wang,

I suggest you to try keep_prob=1, you should get the same result as without dropout. If not there must be something wrong in your code.

IMO, 0.6 is too small for such a small network, it seems that you also applied the dropout on every layer, the network just stop learning.

Some other hints, you can also use other dropout functions like tf.layers.dropout, tf.contrib.slim.dropout, they have a parameter is_training, you don't need to set the keep_prob to 1 during testing.

About the debug, I think in jupyter it's hard. There is a tool tfdbg, with a special Session, you can debug the graph execution step by step.

https://www.tensorflow.org/programmers_guide/debugger

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