

TensorFlow中Variable对象的使用

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所用版本：python3.5.2, tensorflow1.8.0, tensorboard1.8.0

```
In [1]: # 修改variable对象的值，使用Variable.assign() 方法，作用是为Variable对象赋予新值。
```

```
In [2]: import tensorflow as tf
```

```
In [3]: # 创建一个初始值为1的Variable对象
```

```
In [4]: my_var = tf.Variable(1)
```

```
In [5]: # 创建一个Op，使其在每层运行是都将该Variable对象乘以2
```

```
In [6]: my_var_2 = my_var.assign(my_var*2)
```

```
In [7]: # Variable对象的初始化
```

```
In [8]: init = tf.global_variables_initializer()
```

```
In [9]: # 启动一个会话
```

```
In [10]: sess = tf.Session()
```

```
In [11]: # 初始化Variable对象
```

```
In [13]: sess.run(init)
```

```
In [14]: # 将Variable对象乘以2，并将其返回
```

```
In [15]: sess.run(my_var_2)
```

```
Out[15]: 2
```

```
In [16]: # 再次乘以2
```

```
In [17]: sess.run(my_var_2)
```

```
Out[17]: 4
```

```
In [18]: # 再次乘以2
```

```
In [19]: sess.run(my_var_2)
```

```
Out[19]: 8
```

```
In [20]: sess.close()
```

```
In [21]: # 实现Variable对象的自增自减
```

```
In [22]: reset
```

```
Once deleted, variables cannot be recovered. Proceed (y/[n])? y
```

```
In [23]: import tensorflow as tf
```

```
In [24]: my_var = tf.Variable(0)
```

```
In [25]: init = tf.global_variables_initializer()
```

```
In [26]: # 启动两个Session对象
```

```
In [27]: sess1 = tf.Session()
```

```
In [28]: sess2 = tf.Session()
```

```
In [29]: # 在sess1内对Variable对象进行初始化，以及在同一个Session对象中对my_var的值自增
```

```
In [30]: sess1.run(init)
```

```
In [31]: sess1.run(my_var.assign_add(5))
```

```
Out[31]: 5
```

```
In [32]: # 在sess2内做先沟通的运算，但使用不同的自增值
```

```
In [33]: sess2.run(init)
```

```
In [34]: sess2.run(my_var.assign_add(2))
```

```
Out[34]: 2
```

```
In [35]: # 能够在不同的Session对象中独立的对Variable对象的值实现自增/自减
```

```
In [36]: sess1.run(my_var.assign_add(5)) # 5+5=10
```

```
Out[36]: 10
```

```
In [37]: sess2.run(my_var.assign_sub(2)) # 2-2=0
```

```
Out[37]: 0
```

```
In [38]: sess2.run(my_var.assign_sub(4)) # 0-4=-4
```

```
Out[38]: -4
```

```
In [39]: # 将sess1的Variable对象的值重置为初始值0
```

```
In [41]: sess1.run(init)
```

```
In [42]: sess1.run(my_var)
```

```
Out[42]: 0
```

```
In [43]: sess2.run(my_var)
```

```
Out[43]: -4
```

```
In [44]: # 将sess2的Variable对象的值重置为0
```

```
In [45]: sess2.run(init)
```

```
In [46]: sess2.run(my_var)
```

```
Out[46]: 0
```

```
In [47]: sess1.close()
```

```
In [48]: sess2.close()
```

参考文献：人工智能原理与实践：基于Python语言和TensorFlow / 张明，何艳珊，杜永文编著. —— 北京：人民邮电出版社，2019.8.