

1、Octave 简介

Octave 是一个旨在提供与 Matlab 语法兼容的开放源代码科学计算及数值分析的工具，是 Matlab 商业软件的一个强有力的竞争产品。用它来学习机器学习入门是个不错的开头！

2、使用指南

Octave 可以使用 CLI 或是 GUI 模式，本篇使用 CLI 模式，个人感觉它的 GUI 做得不是特别美观，这个是它的界面，和 linux 一些操作符类似，它支持 pwd、ls 等命令，在此基础上内置了许多科学计算中有用的命令。

```
E:\Octave-4.4.0\bin\octave-gui.exe
>>pwd
ans = e:\python study\Machine_Learning_AndrewNg-master\machine-learning-ex1
>>ls
驱动器 E 中的卷是 work
卷的序列号是 0A03-14D3

e:\python study\Machine_Learning_AndrewNg-master\machine-learning-ex1 的目录
[.]      [..]      [ex1]      ex1.pdf
          1 个文件      489,928 字节
          3 个目录 192,714,838,016 可用字节
>>_
```

```
>>3+4
ans = 7
>>1 == 2
ans = 0
>>1 ~= 2
ans = 1
>>1 && 2
ans = 1
>>1 && 0
ans = 0
>>1 || 0
ans = 1
>>0 || 0
ans = 0
>>a = pi
a = 3.1416
>>a = (3>1)
a = 1
>>_
```

```
>>A = [1 2; 3 4; 5 6]
A =

     1     2
     3     4
     5     6

>>B = [1 2 3]
B =

     1     2     3

>>C = [1;2;3]
C =

     1
     2
     3
```

```
>>D = ones(2,3)
D =

     1     1     1
     1     1     1

>>E = zeros(2,3)
E =

     0     0     0
     0     0     0

>>F = rand(2,3)
F =

    0.350520    0.097931    0.395763
    0.875524    0.527427    0.776904
```

```
>>G = eye(3)
G =

Diagonal Matrix

     1     0     0
     0     1     0
     0     0     1

>>H = 1:0.2:3
H =

Columns 1 through 7:

     1.0000     1.2000     1.4000     1.6000     1.8000     2.0000     2.2000

Columns 8 through 11:

     2.4000     2.6000     2.8000     3.0000

>>_
```

```
A =

     1     2
     3     4
     5     6

>>size(A)
ans =

     3     2

>>sz = size(A)
sz =

     3     2

>>size(sz)
ans =

     1     2
```

```
>>size(A,1)
ans = 3
>>size(A,2)
ans = 2
>>length (A)
ans = 3
>>B
B =

     1     2     3

>>length (B)
ans = 3
```

```
>>who
Variables in the current scope:

A      B      C      D      E      F      G      H      a      ans      sz

>>whos
Variables in the current scope:

   Attr Name      Size      Bytes  Class
   ---- ----      ----      -
       A          3x2          48  double
       B          1x3          24  double
       C          3x1          24  double
       D          2x3          48  double
       E          2x3          48  double
       F          2x3          48  double
       G          3x3          24  double
       H          1x11         24  double
       a          1x1           1  logical
       ans        1x1           8  double
       sz         1x2          16  double

Total is 54 elements using 313 bytes

>>clear
>>who
>>whos
>>_
```

```
>>>load ex1data1.txt
>>>whos
Variables in the current scope:

    Attr Name          Size          Bytes  Class
    ====  =====
           ex1data1      97x2             1552  double

Total is 194 elements using 1552 bytes

>>>size(ex1data1)
ans =

    97     2

>>>_
```

```
    5.30540    1.98690
    8.29340    0.14454
   13.39400    9.05510
    5.43690    0.61705

>>>V = ex1data1(1:98)
V =

Columns 1 through 7:

    6.1101    5.5277    8.5186    7.0032    5.8598    8.3829    7.4764

Columns 8 through 14:

    8.5781    6.4862    5.0546    5.7107   14.1640    5.7340    8.4084
```

```
>>>save hello.mat V
>>>ls
驱动器 E 中的卷是 work
卷的序列号是 0A03-14D3

e:\python study\Machine_Learning_AndrewNg-master\machine-learning-ex1\ex1 的目录
[.]          ex1_multi.m          plotData.m
[..]         featureNormalize.m    submit.m
computeCost.m gradientDescent.m        token.mat
computeCostMulti.m gradientDescentMulti.m    warmUpExercise.m
ex1.m        hello.mat
ex1data1.txt [lib]
ex1data2.txt normalEqn.m
              15 个文件          21,565 字节
              3 个目录 192,714,833,920 可用字节
```

```
>>A = [1 2; 3 4;5 6]
A =

     1     2
     3     4
     5     6

>>A(2,2)
ans = 4
>>A(2,:)
ans =

     3     4

>>a(:,2)
error: 'a' undefined near line 1 column 1
>>A(:,2)
ans =

     2
     4
     6

>>_
```

```
>>A
A =

     1     2
     3     4
     5     6

>>A([1,3], :)
ans =

     1     2
     5     6

>>
```

```
>>A
A =

     1     2
     3     4
     5     6

>>A(:,2) = [12;14;16]
A =
```

```
>>A(:)
ans =

     1
     3
     5
    12
    14
    16
    22
    24
    26
```

```
>>A
A =

     1     2
     3     4
     5     6

>>B
B =

     1     2
     3     4
     5     6

>>C = [A B]
C =

     1     2     1     2
     3     4     3     4
     5     6     5     6

>>
```

```
>>A
A =

     1     2
     3     4
     5     6

>>B
B =

     1     2
     3     4
     5     6

>>C = [A;B]
C =

     1     2
     3     4
     5     6
     1     2
     3     4
     5     6

>>_
```

```
>>A
A =

     1     12
     3     14
     5     16

>>A = [A, [22;24;26]]
A =

     1     12     22
     3     14     24
     5     16     26

>>_
```

```
octave:6> A, C
A =

     1     2
     3     4
     5     6

C =

     1     1
     2     2

octave:7> A * C
ans =

     5     5
    11    11
    17    17

octave:8>
```

```
octave:9> A, B
A =

     1     2
     3     4
     5     6

B =

    11    12
    13    14
    15    16

octave:10> A .* B
ans =

    11    24
    39    56
    75    96

octave:11> _
```

```
>>A
A =

     1     2
     3     4
     5     6

>>A .^ 2
ans =

     1     4
     9    16
    25    36

>>1 ./ A
ans =

    1.0000    0.5000
    0.3333    0.2500
    0.2000    0.1667

>>
```

```
>>A
A =

     1     2
     3     4
     5     6

>>log (A)
ans =

    0.00000    0.69315
    1.09861    1.38629
    1.60944    1.79176

>>exp (A)
ans =

    2.7183    7.3891
   20.0855   54.5982
  148.4132  403.4288

>>_
```

```
A =

     1     2
     3     4
     5     6

>>A+ ones(length (A), 1)
ans =

     2     3
     4     5
     6     7

>>A+1
ans =

     2     3
     4     5
     6     7
```

```
>>a = [1, 2, 3, 4]
a =

     1     2     3     4

>>[val, ind] = max(a)
val = 4
ind = 4
>>
```

```
>>A, B
A =

     1     4
     2     3

B =

     2     1
     3     1
```

```
>>A
A =

     1     4
     2     3

>>max(A, [], 1)
ans =

     2     4

>>max(A, [], 2)
ans =

     4
     3

>>S
```

```
>>A
A =

     1     2
     3     4
     5     6

>>A'
ans =

     1     3     5
     2     4     6

>>_
```