

Numpy nD Array Creation

February 16, 2023

```
[1]: !pip install numpy
```

```
Requirement already satisfied: numpy in  
c:\users\juelb\anaconda3\envs\python3.10-ml\lib\site-packages (1.23.3)
```

```
[2]: import numpy as np
```

```
[3]: l = [4, 5.5, 89, 9]
```

```
[4]: l
```

```
[4]: [4, 5.5, 89, 9]
```

```
[5]: np.array(l)
```

```
[5]: array([ 4. ,  5.5, 89. ,  9. ])
```

```
[6]: np.array(l, dtype=np.float32)
```

```
[6]: array([ 4. ,  5.5, 89. ,  9. ], dtype=float32)
```

```
[7]: np.asarray([1,2,3])
```

```
[7]: array([1, 2, 3])
```

```
[8]: np.array(l)
```

```
[8]: array([ 4. ,  5.5, 89. ,  9. ])
```

```
[9]: np.asarray(np.array(l))
```

```
[9]: array([ 4. ,  5.5, 89. ,  9. ])
```

```
[10]: np.arange(10)
```

```
[10]: array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])
```

```
[11]: np.arange(67, 100)
```

```
[11]: array([67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83,
           84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99])
```

```
[12]: np.arange(67, 100, 0.5)
```

```
[12]: array([67. , 67.5, 68. , 68.5, 69. , 69.5, 70. , 70.5, 71. , 71.5, 72. ,
           72.5, 73. , 73.5, 74. , 74.5, 75. , 75.5, 76. , 76.5, 77. , 77.5,
           78. , 78.5, 79. , 79.5, 80. , 80.5, 81. , 81.5, 82. , 82.5, 83. ,
           83.5, 84. , 84.5, 85. , 85.5, 86. , 86.5, 87. , 87.5, 88. , 88.5,
           89. , 89.5, 90. , 90.5, 91. , 91.5, 92. , 92.5, 93. , 93.5, 94. ,
           94.5, 95. , 95.5, 96. , 96.5, 97. , 97.5, 98. , 98.5, 99. , 99.5])
```

```
[13]: np.ones(5)
```

```
[13]: array([1., 1., 1., 1., 1.])
```

```
[14]: np.ones((5, 3))
```

```
[14]: array([[1., 1., 1.],
           [1., 1., 1.],
           [1., 1., 1.],
           [1., 1., 1.],
           [1., 1., 1.]])
```

```
[15]: np.ones((5, 3, 2))
```

```
[15]: array([[[1., 1.],
           [1., 1.],
           [1., 1.]],

           [[1., 1.],
           [1., 1.],
           [1., 1.]],

           [[1., 1.],
           [1., 1.],
           [1., 1.]],

           [[1., 1.],
           [1., 1.],
           [1., 1.]],

           [[1., 1.],
           [1., 1.],
           [1., 1.]])
```

```
[16]: np.array(np.array((10,29,3)))
```

```
[16]: array([10, 29, 3])
```

```
[17]: np.ones_like(5)
```

```
[17]: array(1)
```

```
[18]: np.ones_like([5, 4])
```

```
[18]: array([1, 1])
```

```
[19]: np.ones_like([[5.4, 4], [8, 9]])
```

```
[19]: array([[1., 1.],  
          [1., 1.]])
```

```
[20]: np.ones_like([[[5., 1.],  
                    [1., 1.],  
                    [1., 1.]],  
                  [[1., 1.],  
                    [11., 1.],  
                    [1., 1.]],  
                  [[12., 1.],  
                    [13., 1.],  
                    [15., 1.]],  
                  [[1., 1.],  
                    [1., 5.],  
                    [1., 1.]],  
                  [[1., 1.],  
                    [1., 1.],  
                    [1., 1.]])
```

```
[20]: array([[[1., 1.],  
            [1., 1.],  
            [1., 1.]],  
          [[1., 1.],  
            [1., 1.],  
            [1., 1.]],  
          [[1., 1.],  
            [1., 1.],  
            [1., 1.]],  
          [[1., 1.],  
            [1., 1.],  
            [1., 1.]],  
          [[1., 1.],  
            [1., 1.],  
            [1., 1.]])
```

```

    [1., 1.],
    [1., 1.]],

    [[1., 1.],
     [1., 1.],
     [1., 1.]])

```

```
[21]: np.zeros(6)
```

```
[21]: array([0., 0., 0., 0., 0., 0.])
```

```
[22]: np.zeros((6, 5))
```

```
[22]: array([[0., 0., 0., 0., 0.],
            [0., 0., 0., 0., 0.],
            [0., 0., 0., 0., 0.],
            [0., 0., 0., 0., 0.],
            [0., 0., 0., 0., 0.],
            [0., 0., 0., 0., 0.]])

```

```
[23]: np.zeros_like([[[1., 1.],
                      [1., 1.],
                      [1., 1.]],

                     [[1., 1.],
                      [1., 1.],
                      [1., 1.]],

                     [[1., 1.],
                      [1., 1.],
                      [1., 1.]],

                     [[1., 1.],
                      [1., 1.],
                      [1., 1.]],

                     [[1., 1.],
                      [1., 1.],
                      [1., 1.]])

```

```
[23]: array([[[0., 0.],
              [0., 0.],
              [0., 0.]],

            [[0., 0.],
              [0., 0.],
              [0., 0.]],

            [[0., 0.],
              [0., 0.],
              [0., 0.]],

            [[0., 0.],
              [0., 0.],
              [0., 0.]],

            [[0., 0.],
              [0., 0.],
              [0., 0.]])

```

```

[[0., 0.],
 [0., 0.],
 [0., 0.]],

[[0., 0.],
 [0., 0.],
 [0., 0.]],

[[0., 0.],
 [0., 0.],
 [0., 0.]])

```

```
[24]: np.empty(12)
```

```
[24]: array([1.00482955e-311, 3.16202013e-322, 0.00000000e+000, 0.00000000e+000,
1.14587773e-312, 3.53790670e-057, 7.87630593e-071, 7.69149961e+169,
3.93628829e-062, 3.11023025e+179, 1.60025725e+160, 6.29082725e-066])
```

```
[25]: np.empty_like([[[[0., 0.],
 [0., 0.],
 [0., 0.]],

 [[0., 0.],
 [0., 0.],
 [0., 0.]],

 [[0., 0.],
 [0., 0.],
 [0., 0.]],

 [[0., 0.],
 [0., 0.],
 [0., 0.]]])
```

```
[25]: array([[1.00481761e-311, 1.01283457e-321],
 [0.00000000e+000, 0.00000000e+000],
 [1.89146896e-307, 1.16097020e-028]],

 [[1.26087994e-076, 2.92732918e-028],
 [1.39736859e-076, 1.04917183e-153],
 [5.23081515e-143, 8.70227457e-071]],
```

```

[[2.58142390e-057, 1.86923640e-051],
 [1.13073934e-042, 1.70098498e+256],
 [5.49109388e-143, 1.06396443e+224]],

[[3.96041428e+246, 1.16318408e-028],
 [8.39388494e+165, 9.14066852e-043],
 [7.32118088e+169, 2.58267829e-057]],

[[1.01848862e+248, 1.16096643e-028],
 [9.80058441e+252, 7.50189709e+247],
 [1.14484251e+243, 2.59903827e-144]]])

```

```

[26]: np.empty_like([[[0., 0.],
                      [0., 0.],
                      [0., 0.]],

                    [[0., 0.],
                     [0., 0.],
                     [0., 0.]],

                    [[0., 0.],
                     [0., 0.],
                     [0., 0.]],

                    [[0., 0.],
                     [0., 0.],
                     [0., 0.]],

                    [[0., 0.],
                     [0., 0.],
                     [0., 0.]]]).shape

```

```

[26]: (5, 3, 2)

```

```

[27]: np.eye(5, 3)

```

```

[27]: array([[1., 0., 0.],
            [0., 1., 0.],
            [0., 0., 1.],
            [0., 0., 0.],
            [0., 0., 0.]])

```

```

[28]: np.identity(5, dtype=np.int16)

```

```

[28]: array([[1, 0, 0, 0, 0],
            [0, 1, 0, 0, 0],
            [0, 0, 1, 0, 0],

```

```
[0, 0, 0, 1, 0],  
[0, 0, 0, 0, 1]], dtype=int16)
```

```
[29]: np.full(5, fill_value=9)
```

```
[29]: array([9, 9, 9, 9, 9])
```

```
[30]: np.full((5, 4), fill_value=3)
```

```
[30]: array([[3, 3, 3, 3],  
           [3, 3, 3, 3],  
           [3, 3, 3, 3],  
           [3, 3, 3, 3],  
           [3, 3, 3, 3]])
```

```
[31]: np.full_like([[[0., 0.],  
                    [0., 0.],  
                    [0., 0.]],  
                  [[0., 0.],  
                   [0., 0.],  
                   [0., 0.]],  
                  [[0., 0.],  
                   [0., 0.],  
                   [0., 0.]],  
                  [[0., 0.],  
                   [0., 0.],  
                   [0., 0.]],  
                  [[0., 0.],  
                   [0., 0.],  
                   [0., 0.]]], fill_value=6)
```

```
[31]: array([[6., 6.],  
           [6., 6.],  
           [6., 6.]],  
          [[6., 6.],  
           [6., 6.],  
           [6., 6.]],  
          [[6., 6.],  
           [6., 6.],  
           [6., 6.]])
```

```
[[6., 6.],  
 [6., 6.],  
 [6., 6.]],  
  
[[6., 6.],  
 [6., 6.],  
 [6., 6.]]])
```

[]:

[]:

[]:

[]:

[]:

[]:

[]: