# **Numpy**

# **Importing** import numpy as np **Numpy Array** 1. a = np.array([1,2,3])2. my matrix = [[1,2,3],[4,5,6],[7,8,9]]b = np.array(my matrix) m = np.asmatrix(b).ndim type(b) Methods np.zeros(3) np.zeros(3,3) np.ones() np.arange(0,10) np.linspace(0,10) np.eye(2) **Random Number Generation** np.random.rand() np.random.randn() np.random.randint(0,50,10) Reshaping arr = np.arange(25) arr.reshape(5,5) max ranarr = np.random.randint(0,50,10) ranarr.max() ranarr.argmax() Slicing arr = np.arange(25)slice of arr = arr[0:6]

#### Broadcasting

```
arr[0:6]=100
```

### Copy

```
arr_copy = arr.copy()
```

Indexing

```
arr[8]
arr_2d = arr.reshape(5,5)
arr_2d[:2,:1]
```

## Operations

```
arr>4
arr[arr>4]
arr+100
```

### Operation with 0 as an element

```
arr[0]=0
arr/arr
np.sqrt(arr)
np.argmax(arr)
np.max(arr)

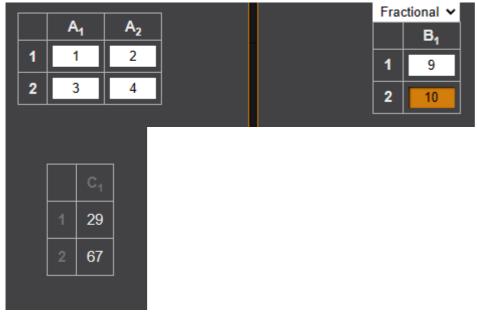
mat=np.arange(1,26).reshape(5,5)
mat[2:,1:]
mat.sum()
mat.sum(axis=0)
```

## np.dot()

```
x = np.array([[1,2],[3,4]])
y = np.array([[5,6],[7,8]])

v = np.array([9,10])
w = np.array([11, 12])
x+v

v.dot(w)
v@w
np.dot(v,w)
```



## np.multiply()

```
print(v*w)
print(np.multiply(v, w))
print(v.T)
```

## Operations on 2d

```
#Set up matrix
arr2d = np.zeros((10,10))
#Length of array
arr_length = arr2d.shape[1]

#Set up array

for i in range(arr_length):
    arr2d[i] = i
arr2d[arr2d>2]
```