VER

1/10

## NUMPY:

Numby stands for Numerical Python.

List is a python library used for working with arrays

Ly It also has functions for working in domain of linear algebra, foweler transform, and matrices

17 It was created in 2005 by Travis Eliphant
17 It is an open source project and ean be
used freely.

4 Most powerful numerical processing library in Rython. Avoray Contented computing.

1. Provides extensions package to python for multi dimensional avvay.

4 very Efficient

4 scientific computation.

Creating a simple averay in numpy: 1/p - Emport numpy as np aver = np. averay ([1, 2, 3, 4]) Polent (avr) 2.5 ()] : hond an Pocent (type (ave))

Olp - [1234] 2 class 'nompy ndavoiay'

NOTE:

the averay object in Numby is called as ndavay, it provides a lot of supporting functions that make working with ndaviay vocy easy. Let = Mat (see of crossess);

(auto Hype (ason)

soil ded

ect to in stands (toppopera): 1/p- 1=[1,2,3,4,8,6,7] th twice that his Pount (type(1)) ave = np. aveay([1]) Poelnt (type (ave)) Poelnat ("Lest: ", 1) Poeint ("NP Aveay: ", avr)

O/P - < class 'list'>

< class 'numpy-indaveray's

& Lest: [1, 2, 3, 4, 5, 6, 7]

NP Aronay:[[1234567]]

hour hour

(Over) equal trabel

1/p - avr = np. aveange(10)

Pount (avr)

Pount (type (avr))

0/p - [0123.456789]

Class 'numpy ndaviay'7.

1/p-1.% time.

1st = list (range (1000000));

for i in range (1000000):

lst[i] \*= lst[i]

ofp - Wall time: 448 ms

1/p - %. % three

aver = np. arange (1000000)

ave = ave \* ave

0/p - Wall time: 6.95 ms.



(overjost ) tabel

1/p - aver = np. averay ([1, 2, 3, 4])

Poeint (ave. ndim) # forint number of dimensions

# Point shape

Point (avershape)

# Point length

len
Point (wee)

# Pount Data type

Point (ave-dtype)

# Porlent stem size in byte of each element Porlent (avor-stem size)

0/p - 1

(4, )

4

Int 32

4

1/p - aver = np. averay ([[1,2,3],[4,5,6]]) Pount (avoi) Prelnt (ave. ndem) Pount (avv. shape) Podnt (lenlavo) I haded who ope Poetnt (avoidtype) Polat (avoc. Itemslze) # Pount diagonal elements Pount (np. diag (avvi)) Below (assection) [123] Op -[456] Pullet forst-iterest

0/p - [[123] [456] 2 (2,3) 2 (nt32 4 [15] 1/p - aver = np. ones ((3,3)) Print (ave)

[1. 1. 1.] [1- 1- 1-]] PRIVATION OF THE STATE OF THE ST

ofp - [[1. 1. 1.] | 1.] + ets a floating type

1/p- ave = np. zeros((3,3)) Prelat (over)

0/p- [[0. 0. 0.] [0.0.0.] [0.0.0.]] [0.0.0]

1/p - ave = np. eye(3) point (avv)

eye = Edentity matrix

[0 0 0]

10000

10000

Pr 3 5 1 - 90

0/p - [[. p. 0.] [0.1.0.] [0.0.1.]

1/p - avec = mp.eye(3,2) Poulnt (ave)

O/p - [[10 00]

```
1/p - aver = pp. stange(10) (132)
   Print (arr)
```



1600000

population

1.0 gan - de

Open 1 property

OP-[0123456789]

1/p - avoi = np. siange (1,10) Pulat (avoi)

O/P-[1,23456789]

1/p- ave= np. avange(1, 10, 2). Prent (avr)

Op - [13579]

1/p - avec = np. zeros ((3, 3))

Pount (avv)

Prent(ave dtype)

Portnt (avor Items (ze)

Op - [[0. 0. 0.] [0.0.0.]

[0.0.0.]

Hoat64