upGrad

Summary

NumPy

NumPy or Numerical Python is the mathematical library of Python that operates on arrays.

Introduction to arrays

Initialising an array using a list:

Operator	Example (Input)	Example (Output)
np.array()	array_1d = np.array([2, 4, 5, 6, 7, 9]) print(array_1d)	[2 4 5 6 7 9]
	array_2d = np.array([[2, 3, 4], [5, 8, 7]]) print(array_2d)	[[2 3 4] [5 8 7]]

Creating and Initialising an array

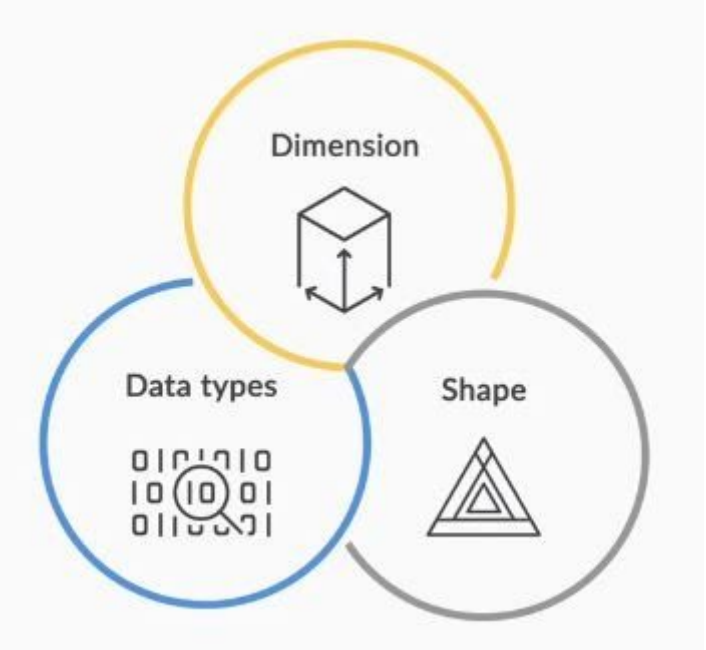
Different ways of creating and initialising an array:

upGrad

Operator	Explanation
np.array()	Convert lists or tuples to arrays
np.ones()	Create an array of 1s
np.zeros()	Create an array of 0s
np.random.random()	Create an array of random numbers between 0 and 1
np.arange()	Create an array with increments of a fixed step size
np.linspace()	Create an array of fixed length
np.full()	Create a constant array of any number 'n'
np.tile():	Create a new array — by repeating an existing array — for a particular number of times
np.random.randint():	Create a random array of integers within a particular range

Structure and Content of an Array

Important attributes of an array and how to identify them:



upGrad

Operator	Explanation	Example
.shape	Shape of array (n x m)	print("Shape: {}".format(rand_array.shape))
.dtype	data type (int, float etc.)	print("dtype: {}".format(rand_array.dtype))
.ndim	Number of dimensions (or axes)	print("Dimensions: {}".format(rand_array.ndim))
.itemsize	Memory used by each array element in bytes	print("Item size: {}".format(rand_array.itemsize))

Loading, Indexing and Iterating through an Array

Navigating through an array:

Basic Statistical Operations in NumPy

The different functions:

Operator	Explanation	Example
np.mean()	Calculate the mean of an array (of the entire array or along either of the axis)	np.mean(array_name, axis)
np.median()	Calculate the median of an array (of the entire array or along either of the axis)	np.median(array_name, axis)
np.std()	Calculate the standard deviation of an array (of the entire array or along either of the axis)	np.std(array_name, axis)
np.var()	Calculate the variance of an array (of the entire array or along either of the axis)	np.var(array_name, axis)

upGrad