NumPy

NumPy is a Python package which stands for ‘Numerical Python’. It is the core library for scientific computing, which contains a powerful n-dimensional array object, provide tools for integrating C, C++ etc. It is also useful in linear algebra, random number capability etc. NumPy array can also be used as an efficient multi-dimensional container for generic data.Numpy array is a powerful N-dimensional array object which is in the form of rows and columns.

**import** **numpy** **as** **np**

NumPy’s array class is called ndarray. It is also known by the alias array.The more important attributes of an ndarray object are:

ndarray.ndim

the number of axes (dimensions) of the array.

ndarray.shape

the dimensions of the array. This is a tuple of integers indicating the size of the array in each dimension. For a matrix with n rows and m columns, shape will be (n,m). The length of the shape tuple is therefore the number of axes, ndim.

ndarray.size

the total number of elements of the array. This is equal to the product of the elements of shape.

ndarray.dtype

an object describing the type of the elements in the array. One can create or specify dtype’s using standard Python types. Additionally NumPy provides types of its own. numpy.int32, numpy.int16, and numpy.float64 are some examples.

ndarray.itemsize

the size in bytes of each element of the array. For example, an array of elements of type float64 has itemsize 8 (=64/8) while one of type complex32 has itemsize 4 (=32/8). It is equivalent to

ndarray.dtype.itemsize.

ndarray.data

the buffer containing the actual elements of the array. Normally, we won’t need to use this attribute because we will access the elements in an array using indexing facilities.