

NumPy Functions

Here are some of the basic functions provided by NumPy.

Matrix Functions

`arrange()` returns a new array of given shape and type, with random values
`linspace()` returns evenly spaced numbers over a specified interval
`sort()` sorts the given array
`array()` creates a matrix
`dot()` performs matrix multiplication
`transpose()` transposes a matrix
`zeros()` creates an array filled with zeros
`ones()` creates an array filled with ones
`concatenate()` joins a sequence of arrays along an existing axis
`linalg.inv()` calculates the inverse of a matrix
`linalg.det()` calculates the determinant of a matrix
`linalg.lstsq()` computes the vector x that approximately solves the equation $a @ x = b$
`newaxis` is used to increase the dimension of the existing array by one more dimension
`shape()` returns the shape of an array
`full()` return a new array of given shape and type, filled with fill value
`empty()` returns a new array of given shape and type, with random values
`sum()` returns the sum of given array
`mean()` returns the average of the array elements
`diff()` calculate the n-th discrete difference along the given axis

Polynomials

`polynomial.polynomial.polyroots()` used to compute the roots of a polynomial
`polynomial.polynomial.polyval()` used to compute the roots value of a polynomial for the given x
`polynomial.polynomial.polyfit()` is a method that fits the data within a polynomial function
`polynomial.polynomial.polyder()` function to perform differentiation on polynomials

Solving Linear Equations

`linalg.cond()` calculates the condition number of a matrix
`linalg.matrix_rank()` calculates the rank of matrix
`linalg.solve()` solves a linear matrix equation, or system of linear scalar equations

Math Functions

`round()` returns the value rounded to the desired precision

`floor()` returns the values of array down to the nearest integer that is less than each element

`ceil()` returns the values of array up to the nearest integer that is greater than each element.

`exp()` calculates the exponential value of an input array

`log()` returns the natural logarithm of the given value

`abs()` calculates the absolute value element-wise

`sign()` returns an element-wise indication of the sign of a number

`trapz()` integrate along the given axis using the composite trapezoidal rule

Other Functions

`random.random()` returns a random float number between 0 and 1

`interp()` one-dimensional linear interpolation for monotonically increasing sample points

Scipy Functions

`interpolate.interp1d()` Specifies the kind of interpolation as a string or as an integer specifying the order of the spline interpolator to use

`optimize.curve_fit()` use non-linear least squares to fit a function, *f*, to data

`integrate.quad()` compute a definite integral

Built-in Functions or Methods of Python

Python String Methods (https://www.w3schools.com/python/python_ref_string.asp)

`lower()` returns a string where all characters are lowercase

`upper()` returns a string where all characters are upper-case

`replace()` returns a string where a specified value is replaced with a specified value

`split()` splits the string at the specified separator and returns a list

Python List/Array Methods (https://www.w3schools.com/python/python_ref_list.asp)

`append()` adds an element at the end of the list

`remove()` removes the first occurrence of the value

`sort()` sorts the given list

Python Built in Functions (https://www.w3schools.com/python/python_ref_functions.asp)

`input()` allowing user input

`str()` returns a string object

`float()` returns a floating point number

`dir()` returns a list of the specified object's properties and methods

len() returns the size of the list

range() returns a sequence of numbers, starting from 0 and increments by 1 (by default)

open() opens a file and returns a file object

Python File Methods

read() method for reading the content of the file

write() method for writing data to a file

readline() method to read one line of the file

seek() is used to change the position of the File Handle to a given specific position