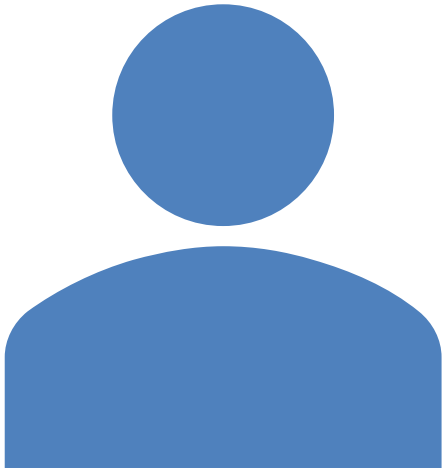

A comprehensive guide to NumPy functions with examples

NumPy Commands Overview

np.array()

- Description:
- Creates a NumPy array from a list or tuple.

- Example:
- arr = np.array([1, 2, 3])

np.zeros()

- Description:
- Creates an array of zeros with specified shape.

- Example:
- arr = np.zeros((2, 3))

np.ones()

- Description:
- Creates an array of ones with specified shape.

- Example:
- arr = np.ones((3, 3))

np.empty()

- Description:
- Creates an uninitialized array with specified shape.

- Example:
- arr = np.empty((2, 2))

np.arange()

- Description:
- Creates an array with evenly spaced values within a range.

- Example:
- arr = np.arange(0, 10, 2)

np.linspace()

- Description:
- Creates an array with evenly spaced numbers over a specified interval.

- Example:
- arr = np.linspace(0, 1, 5)

np.random.rand()

- Description:
- Generates an array of random numbers from a uniform distribution.

- Example:
- arr = np.random.rand(3, 3)

np.random.randn()

- Description:
- Generates an array of random numbers from a standard normal distribution.

- Example:
- arr = np.random.randn(3, 3)

np.shape()

- Description:
- Returns the shape of an array.

- Example:
- shape = arr.shape

np.size()

- Description:
- Returns the total number of elements in an array.

- Example:
- size = arr.size

np.reshape()

- Description:
- Gives a new shape to an array without changing its data.

- Example:
- arr = arr.reshape((3, 2))

np.transpose()

- Description:
- Reverses or permutes the axes of an array.

- Example:
- arr = arr.transpose()

np.dot()

- Description:
- Computes the dot product of two arrays.

- Example:
- result = np.dot(a, b)

np.sum()

- Description:
- Calculates the sum of array elements over a specified axis.

- Example:
- total = arr.sum(axis=0)

np.mean()

- Description:
- Calculates the mean of array elements.

- Example:
- mean = arr.mean()

np.median()

- Description:
- Calculates the median of array elements.

- Example:
- median = np.median(arr)

np.std()

- Description:
- Calculates the standard deviation of array elements.

- Example:
- std = np.std(arr)

np.var()

- Description:
- Calculates the variance of array elements.

- Example:
- var = np.var(arr)

np.sqrt()

- Description:
- Computes the non-negative square root of each element in the array.

- Example:
- sqrt_arr = np.sqrt(arr)

np.sin()

- Description:
- Calculates the trigonometric sine of each element in the array.

- Example:
- sine_arr = np.sin(arr)

np.sort()

- Description:
- Sorts the elements of an array along a specified axis.

- Example:
- sorted_arr = np.sort(arr, axis=1)

np.concatenate()

- Description:
- Joins two or more arrays along an existing axis.

- Example:
- combined = np.concatenate((arr1, arr2), axis=0)

np.vstack()

- Description:
- Stacks arrays in sequence vertically (row-wise).

- Example:
- stacked = np.vstack((arr1, arr2))

np.hstack()

- Description:
- Stacks arrays in sequence horizontally (column-wise).

- Example:
- stacked = np.hstack((arr1, arr2))

np.split()

- Description:
- Splits an array into multiple sub-arrays.

- Example:
- sub_arrays = np.split(arr, 3)

np.where()

- Description:
- Returns elements chosen from x or y depending on a condition.

- Example:
- result = np.where(arr > 0, arr, 0)

np.unique()

- Description:
- Finds unique elements in an array.

- Example:
- unique_elements = np.unique(arr)