­­­NumPy Introduction

What is NumPy?

NumPy is a Python library used for working with arrays.

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

NumPy was created in 2005 by Travis Oliphant. It is an open source project and you can use it freely.

NumPy stands for Numerical Python.

Why Use NumPy?

In Python we have lists that serve the purpose of arrays, but they are slow to process.

NumPy aims to provide an array object that is up to 50x faster than traditional Python lists.

The array object in NumPy is called ndarray, it provides a lot of supporting functions that make working with ndarray very easy.

Arrays are very frequently used in data science, where speed and resources are very important.

**Data Science:** is a branch of computer science where we study how to store, use and analyze data for deriving information from it.

Why is NumPy Faster Than Lists?

NumPy arrays are stored at one continuous place in memory unlike lists, so processes can access and manipulate them very efficiently.

This behaviour is called locality of reference in computer science.

This is the main reason why NumPy is faster than lists. Also it is optimized to work with latest CPU architectures.

Which Language is NumPy written in?

NumPy is a Python library and is written partially in Python, but most of the parts that require fast computation are written in C or C++.

# NumPy Getting Started

## Import NumPy

Once NumPy is installed, import it in your applications by adding the import keyword:

import numpy

Now NumPy is imported and ready to use.

### **Example**

import numpy  
arr = numpy.array([1, 2, 3, 4, 5])  
print(arr)

## NumPy as np

NumPy is usually imported under the np alias.

**alias:** In Python alias are an alternate name for referring to the same thing.

Create an alias with the as keyword while importing:

import numpy as np

Now the NumPy package can be referred to as np instead of numpy.

### **Example**

import numpy as np  
arr = np.array([1, 2, 3, 4, 5])  
print(arr)

## Checking NumPy Version

The version string is stored under \_\_version\_\_ attribute.

### **Example**

import numpy as np  
  
print(np.\_\_version\_\_)