NUMPY TUTORIAL

Numpy Introduction

By Armita Razavi

Numpy Introduction

Numpy or “Numerical Python” is a Python library for Numerical Computations.

It’s fast, efficient, and suitable for Data Science Tasks.

Useful for Linear Algebra, number generation, fourier Transform and ...

Why Using Numpy?

- Numpy is much faster than Python arrays. Because np arrays are stored in one location in memory! (Locality Of Reference)
- It's optimized for latest CPU architecture.
- It's fast because parts of the Numpy code are written in C or C++
- Adjusted for working with Machine Learning and Deep Learning

Numpy vs. Python Arrays

Feature	Numpy Array	Python List
Speed	Slower	Much Faster
Memory	Stored in Different Locations (Inefficient)	Stored in one Location (Efficient)
Operation	Requires Loops or List Comprehension	Element-wipe Operation
Data Type	Variant/Mixed Data Types	One Consistent Data Type

Warm Up Practice

- ✓ Create a 3D array of shape (2,3,2)
- ✓ Find the shape, size, number of dimensions and data type of this array
- ✓ Reshape it into arrays of shape (3,4), (1,12,1), (2,6), and (1,6,2)

one by one.