Learning NumPy - An Introduction

We'll cover the following

Why NumPy

Data comes in all shapes and sizes. We can have image data, audio data, text data, numerical data, etc. We have all these heterogeneous sources of data but computers understand only 0's and 1's — At its core, data can be thought of as arrays of numbers. In fact, the prerequisite for performing any data analysis is to convert the data into numerical form. This means it is important to be able to store and manipulate arrays efficiently, and this is where Python's NumPy package comes into picture.

Now, you might be questioning, *"When can I use Python's built-in lists and to do all sorts of computations and manipulations through list comprehensions, for-loops, etc., why should I bother with NumPy arrays?"* You are right in thinking so because, in some aspects, NumPy arrays are like Python's lists. Their advantage is that they provide **more efficient storage and data operations** as the arrays grow larger in size. This is the reason NumPy arrays are at the core of nearly all data science tools in Python. This, in turn, implies that it is essential to ***know NumPy well!***

Lessons Overview

In this *Learning NumPy* series, we will start by understanding the basics of array manipulations in NumPy. We will then proceed to learn about computations, comparisons, and other more advanced tricks.

Understanding concepts through code-examples hands-on examples is always better because it helps us retain information in long-term memory. Plus, it

makes learning easier, fun and more intuitive. So, it's a *no-brainer* that we are going to learn via interactive code examples in this lesson.

It is also important to recall and apply whatever we learn by practicing — we will end with some exercises to *hit-refresh* on the concepts learned. The reason we have exercises at the end of the entire course rather than at the end of each lesson is because recalling information after some time is a better way of learning.

In short, this course is set up to have **interactive code-examples as we go and hit-refresh exercises at the end**.

Enough talking! Without further ado, let's dive into the world of NumPy.