## Machine Learning Laboratory

## (410302)

## BE Sem I Honors in AI/ML

### Academic Year: 2023-24

Lab Assignment No.2

**Problem Statement:**

Write a program to solve assignments on NumPy basic

**Objective**

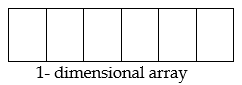
* Write code for Numpy assignments

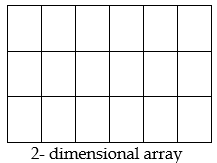
**Python Lab Assignments**

## What is NumPy?

NumPy is an open source Python library that is used in almost every field of science and engineering. It contains a powerful N-dimensional array object. An N-dimensional array is simply an array with any number of dimensions. In NumPy, dimensions are also called axes. An array with a single dimension is known as vector, while a matrix refers to an array with two dimensions. For 3-D or higher dimensional arrays, the term tensor is also commonly used.

Array is a collection of "items" of the same type. The item of array can be accessed using index. Every item of array takes up the same size block of memory.





Differences between NumPy array and the standard Python list The Python core library provides a list object that is similar to an array. But there are some differences between NumPy array and Python list:

* NumPy arrays have fixed size, unlike Python lists which can grow dynamically.
* All elements in a NumPy array are required to be of the same data type whereas the Python list can contain any type of element.
* NumPy arrays are faster than lists.
* NumPy arrays have optimized functions such as built-in linear algebra operations etc.

## Installing NumPy

Python comes with an inbuilt package management system, pip. Pip can install, update, or delete any official package.

You can install numpy package via the command line (cmd) by entering:

python -m pip install --user numpy

## How to import NumPy

In order to start using NumPy and all of the functions available in NumPy, you’ll need to import it. This can be easily done with this import statement:

import numpy

Or you can shorten numpy to np in order to save time.

import numpy as np

**Lab Exercise**

**Prefer (NumPy Exercises.ipynb) and solve the exercise in Jupyter.**