UECS3213/ UECS3453 Data Mining

SESSION: January 2019

Lab 3: Introduction to numpy Library

Introduction

In Python, no matter what the data are, the first step in making them analyzable will be to transform them into arrays of numbers. numpy, which stands for Numerical Python, is a **math library** consisting of multidimensional array objects and a collection of routines for processing those arrays. Using numpy, mathematical and logical operations on arrays can be performed. The numpy library provides us with an array data structure that holds some benefits over Python lists, such as: being more **compact**, **faster** access in reading and writing items, being more convenient and more efficient.

numpy is a Python library that is the core library for scientific computing in Python. It contains a collection of tools and techniques that can be used to solve on a computer mathematical models of problems in Science and Engineering. One of these tools is a high-performance multidimensional array object that is a powerful data structure for efficient computation of arrays and matrices. To work with these arrays, there's a huge amount of high-level mathematical functions operate on these matrices and arrays.

Objectives

At the end of this lab, you are expected to acquire the following:

a) What Is A Python Numpy Array?
b) How To Make numpy Arrays
c) How numpy Broadcasting Works
d) How Do Array Mathematics Work?
e) How To Subset, Slice, and Index Arrays
f) How To Ask For Help
g) How To Manipulate Arrays
h) How To Visualize numpy Arrays
i) Beyond Data Analysis with numpy

Instruction

1. Visit the "Python Numpy Array Tutorial" at the following link: https://www.datacamp.com/community/tutorials/python-numpy-tutorial
2. Follow the step-by-step instructions in the tutorial.

Other Related References

- https://www.datacamp.com/community/blog/python-numpy-cheat-sheet/
- https://hackernoon.com/introduction-to-numpy-1-an-absolute-beginners-guide-to-machine-learning-and-data-science-5d87f13f0d51
- https://www.tutorialspoint.com/numpy
- http://cs231n.github.io/python-numpy-tutorial

The End