**Summer 2023: CS5710 – Machine Learning**

**In-Class Programming Assignment-1**

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**GitHub Link:** [**https://github.com/SravyaChevutukur/ML-ICP1**](https://github.com/SravyaChevutukur/ML-ICP1)

**1. Numpy:**

1. Using NumPy create random vector of size 15 having only Integers in the range 1-20.
   1. Reshape the array to 3 by 5
   2. Print array shape.
   3. Replace the max in each row by 0

**Solution:**

* Reshaping the array to 3 by 5 using reshape() function.
* Printing the array shape using shape() function.
* Replacing the max in each row by 0 and printing the final array.

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Create a 2-dimensional array of size 4 x 3 (composed of 4-byte integer elements), also print the shape, type and data type of the array.

**Solution:**

* Firstly, creating a 2D array of size 4 x 3.
* Printing the shape, type, datatype using shape(), type(), dtype() functions respectively.

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1. Write a program to compute the eigenvalues and right eigenvectors of a given square array given below: [[ 3 -2]

[ 1 0]]

**Solution:**

* Computing the eigenvalues and right eigenvectors of a given square array.

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1. Compute the sum of the diagonal element of a given array.

[[0 1 2]

[3 4 5]]

**Solution:**

* Computing the sum of the diagonal element of a given array by using trace() function.

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1. Write a NumPy program to create a new shape to an array without changing its data.

Reshape 3x2:

[[1 2]

[3 4]

[5 6]]

Reshape 2x3:

[[1 2 3]

[4 5 6]]

**Solution:**

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**2. Matplotlib**

* 1. Write a Python programming to create a below chart of the popularity of programming Languages.
  2. Sample data:

Programming languages: Java, Python, PHP, JavaScript, C#, C++ Popularity: 22.2, 17.6, 8.8, 8, 7.7, 6.7

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**Solution:**

* Python programming is created for chart of the popularity of programming Languages.

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