Sri Sivasubramaniya Nadar College of Engineering, Kalavakkam – 603 110
(An Autonomous Institution, Affiliated to Anna University, Chennai)

UCS2612 Machine Learning Laboratory

Academic Year: 2023-2024 Even **Batch: 2021-2025**
Faculty In-charges: Y.V. Lokeswari & Nilu R Salim **VI Semester A & B**

A. No. : 1 **Working with Python packages - Numpy, Scipy, Scikit-learn, Matplotlib**

1. **Explore the various functions / methods that come under the following Python Libraries.** [CO1, K2]

   Numpy
   https://numpy.org/numpy-tutorials/features.html
   https://www.w3schools.com/python/numpy/default.asp

   Pandas
   https://pandas.pydata.org/docs/user_guide/10min.html
   https://www.w3schools.com/python/pandas/default.asp

   Scipy
   https://docs.scipy.org/doc/scipy/tutorial/special.html#
   https://www.w3schools.com/python/scipy/scipy_graphs.php

   Scikit-learn
   https://scikit-learn.org/stable/
   https://scikit-learn.org/stable/tutorial/index.html

   Matplotlib
   https://matplotlib.org/stable/tutorials/index.html
   https://www.w3schools.com/python/matplotlib_intro.asp

2. Explore the public repositories given below.
   UCI Machine Learning Repository: https://archive.ics.uci.edu/datasets
   Kaggle: https://www.kaggle.com/datasets

Download the following dataset from UCI Machine Learning Repository and identify the type of ML model to be used (Supervised, Unsupervised, Semi-supervised, Regression, Classification). [CO1, K3]

i. Loan amount prediction.
ii. Handwritten character recognition.
iii. Classification of Email spam and MNIST data.
iv. Predicting Diabetes.
v. Iris Dataset.

List down the features and class labels from the dataset.

Explore the steps involved in the Learning process.

i. Loading the dataset.
ii. Pre-Processing the data (Handling missing values, Normalization, Standardization).
iii. Exploratory Data Analysis.
iv. Feature Selection Techniques.
v. Split the data into training, testing and validation sets.

Optional Question

Explore libraries such as Theano, TensorFlow, Keras, Pytorch. [CO1, K2]