

Department of Electronics and Communication Engineering Visvesvaraya National Institute of Technology

Assignment 6: Machine Learning with Python Laboratory; ECL 443. Odd Semester, 2023-2024

Due Date: 23rd October 2023.

1. You have to upload your digital form of solutions to the Google classroom page created for this purpose. You should prepare the laboratory report in the given format as mentioned in the introductory class for this course i.e. the laboratory report should contain the Abstract, Introduction, Method/Procedure, Results, Discussions, Conclusions and Appendices [you should paste your code here]. Alongwith the laboratory report, you should also upload the python file in such a manner that it can be ready executed in Spyder and all the required graphs in the correct format are generated. Please make sure that in the laboratory report, the plots are presented in clear and discernible manner.
2. You should name your python file the following. Your complete rollnumber_linreg. For example, if your roll number is BT20ECE001, then your function should be named as BT20ECE001_linreg.
3. Include the answer of all the questions in the Results Section of your report SEQUENTIALLY. The answers will be checked sequentially, so if any question is not according to the sequence, that will not be checked.
4. DO NOT COPY FROM EACH OTHER. TRY EACH QUESTION ON YOUR OWN. WRITE THE LABORATORY REPORT USING YOUR OWN LANGUAGE. REMEBRE, THIS IS A BASIC COURSE AND THE CONCEPTS WILL BE REQUIRED THROUGHOUT YOUR DEGREE PROGRAM AND POSSIBLEY, FOR YOUR JOB/HIGHER STUDY. IF YOU COPY, YOU ARE HARMING YOURSELF.

Implementation of Artificial Neural Network.

This is an extension of the work that you have done for Assignment 5.

1. Reconstruct the original data from PC space [that you computed in Q1 in Assignment 5] and compute the MSE between the original data and the reconstructed data. Transform the original data in PC space considering all the Principle components and then reconstruct the original data from PC space. Compute the MSE between the original data and the reconstructed data.
2. Compute the MSE between the reconstructed data, obtained using the trained Autoencoder [Question 2 in Assignment 5] and the original data. Compare the MSE with that you obtained using PCA.