

Tutorial 5

In the first part of this tutorial you will learn how to train a neural network classifier for classifying 3 wine types based on their chemical ingredients. The R library 'neuralnet' will be used to train and build the neural network.

- 1- **[Pre-lab]** Install and set the 'neuralnet' library. Load the wine dataset
- 2- Observe the dataset using 'head' command
- 3- Extract the first 100 samples as a training set and the rest as a test set
- 4- Train a neural network model based on all the given features
- 5- Classify the test set using the trained model
- 6- Look at the predicting results
- 7- Calculate the accuracy of your model

In the second part you will be able to transform the features using PCA and analyze how the results will differ.

- 1- Load the 'prcomp' library
- 2- Run PCA over all the features of the previous dataset after scaling
- 3- Observe the dataset using 'head' command
- 4- Compare the standard deviation of the modified dataset and the original one
- 5- Decide how many principal components should be retained using the plot function
- 6- Follow steps 4 to 7 of the first part using the PCAs you obtained from the previous step

Hand in: Compare the results in terms of accuracy of the models before and after PCA.