

R for Principal Components Analysis

Dolores Romero Morales

The aim of this workshop is to work on building Principal Components using a cars dataset that is familiar to you (mtcars), which can be found in R, and an email dataset that is also familiar to you (spam.txt), which can be found on CANVAS.

Step 1. Load the 'mtcars' dataset and get the dimension of the dataset.

Step 2. To get familiar with the mtcars dataset, calculate the covariance matrix and print it with two decimal places.

Step 3. Perform a Principal Components Analysis.

Step 4. Plot the first two Principal Components.

Step 5. Repeat Step 4 for the first three Principal Components. Use the scatterplot3d package, and the function 'scatterplot3d()'.

Step 6. Print the covariance matrix of the Principal Components, using two decimal places, and get the total of the diagonal.

Step 7. Print information on the proportion of total variance explained by the Principal Components.

Step 8. Perform Steps 3-5 to the spam dataset.