**In-Class Exercise – “PCA Code”**

Due Date: 2022/03/28, Monday, 23:59

Objective: Apply PCA to reduce the dimension of the data and visualize it into 3 dimensions plot (in matlab).

Explanations:

1. Download the sample data (the raw data from your HHT experiment result)
2. Copy this code into Matlab worksheet and complete it according to the clue

| clear;  % Load mat file  *Write a code to load Raw Data from your HHT experiment result*  See PCA Lab Session PPT, page 45  % Merge both data L1R0 and L1R1 into one matrix  *Write a code to merge both data*  See PCA Lab Session PPT, page 45  numberDimensions = 3;  % Use PCA function to reduce dimension of The Raw Feature from 25 dimension to 3 dimension  % get the score value  % the first column is corresponds to PC1  % the second column is corresponds to PC2  % and so on ...  *Write a code to perform PCA using Raw Data*  See PCA Lab Session PPT, page 45  % Visualize the result using scatter function  % Divide the result of PCA into half  % the first half is L1R0  Figure  see PCA Lab Session PPT, page 46  hold on  % the second half is L1R1  see PCA Lab Session PPT, page 46  hold off  grid on |
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1. Use MATLAB to run the code and take a screenshots of your data and result.
2. Compress(.zip, .rar) the following file with the name of the group ( e.g. **PCA\_group-1.zip**).
   * 1. Matlab Code(\*.m)
     2. Report(e.g **PCA\_group-1.doc/\*.docx**) :
     + Figure of the result of PCA of L1R1 and L1R0
     + Explain what pca does upon your data
     + Conclusions of result
3. To update the contents of report can be directly re-upload file with the name of version (e.g. Group\_1\_v2.zip).

Note:

1. Each group, one report.
2. Upload the file before 23:59 on Monday (March 28th, 2022) on ee-class site ([*https://eeclass.ncu.edu.tw*](https://eeclass.ncu.edu.tw/)) to complete.