In The Name of Allah
Machine Learning (Fall 2018)
Instructor: Mahdi Yazdian
TA: Mrs. Nikzad
Project: 10-classes Classification

This final project is defined as a 10-classes classification problem including airplane, automobile, bird, cat, deer, dog, frog, horse, ship, and truck. You can do the project individually or as a 2-member group. The group(s) with the best results achieve higher score.

- **Data Description**

Dataset (CHFAR-10) is available in https://www.cs.toronto.edu/~kriz/cifar.html and it has Python and Matlab version. Dataset consists of 60000 32x32 color images in 10 classes, with 6000 images per class. There are 50000 training images and 10000 test images. (Note: you can use data as much as needed to obtain better accuracy)

- **Goal**

You are expected to propose your best solution for outputting labels of entry images.

- **Experimental Results and Discussion.**

In order to have a same framework for comparison, you should partition dataset into validation set (20%), test set (20%), and train set (60%). Please report the performance of your methods on all partitions of dataset. Please provide any arbitrary table, figure or plot to analysis your results.

- **Delivery**

You are expected to deliver:

1- The final codes. Note that your code is needed to be self-comment. Provide all possible used toolbox and implement your codes as a functional form. Note that to have a main function called "MLProject_Main" to run the code.

2- A comprehensive report. The final report should be a two-column 4-page report in IEEE paper format. Therefore, same as a paper, your report should contain usual sections:

   i. Abstract
   ii. Introduction: including problem definition, a brief literature review, motivation, the general view of the proposed method
   iii. Proposed method: including intuition (why should it be the better solution?), description of your algorithms.
   iv. Evaluation results: including evaluation framework, the possible figures, tables or plots. Compare the methods (including the base method) and discus about the results. Enumerate the advances or disadvantages of the best proposed method.
   v. Conclusion
   vi. References.

Good Luck