In The Name of Allah
Machine Learning (Spring 2019)
Instructor: Mahdi Yazdian
TA: Mrs. Nikzad
Project: Fake News Detection

The final project is defined as a 2-classes classification problem for detecting fake News. You can do the project individually or as a 2-member group. The group(s) with the best results achieve higher score.

- **Data Description**

The dataset has been uploaded on the course home page. It contains 2 different classes. One class has 1870 fake news and another one has 2135 real news.

- **Goal**

According to the related researches, you are expected to propose your best solution for detecting fake News.

- **Experimental Results and Discussion.**

In order to have a same framework for comparison, the data is partitioned into validation set (20%) test set (20%) and train set (60%). Please report the performance of your methods on both train and validation sets. The test set is not given to the students. All students should test their code on oral delivery session. It means every student have a simple framework that we could upload our test set. So your framework should calculate the metrics which is described as follows:

- Create a confusion matrix: It describes the performance of a classifier so that you can see what types of errors your classifier is making.
- Calculate the precision, recall, and F1 score for each class. Then calculate average F1 score, which shows the single-number metric you are looking for.
- Calculate per class accuracy as well as average accuracy.

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