Assignment 3 (10 points)

Due on: 5 pm March. 30th, 2020

Late policy: Any late submission will **not** be marked

# Description

1. Learn how to use GAN network to generate new images.
2. Learn how to use GAN network for data argumentation.
3. Learn how to use LSTM for sequence problem recognition.

# Requirement

1. Students need to use GAN network to generate new images. (5 points)

* Downloading any image dataset from Internet (students could use any dataset they want to use).
* Designing their own GAN models (Discriminator and Generator)
* Obtaining the generated new images :The new generated images should be similar to the original images.
* (option) Students could use the Structural Similarity Index (SSIM) method for measuring the quality between the original images and the generated new images.

1. Using GAN network to boost the performance in Assignment 2. (5 points)

* Students need to use the GAN network as a data augmentation method in the Assignment 2.
* Students need to re-do the assignment 2 by adding the GAN data augmentation method.
* The obtained results with GAN should meet the following performance baseline:

CIFAR10>88%,  CIFAR100>75%, Caltech101>85%, Caltech256>70%, Scene15>88%.

1. Using LSTM for time serious problem recognition. (5 points)

* Downloading any sequence dataset from Internet (for example COVID-19 dataset! <https://blogs.mathworks.com/loren/2020/03/16/analyzing-novel-corona-virus-covid-19-dataset/>) , Then, using LSTM or other RNN models to obtain the prediction.

1. Students could select two sub-questions mentioned above. If one student complete all of the questions, no additional points will be given.

# Document requirement

* Source codes
* Experimental report
* Screen-shot results.