# NVLab Summer School 2019
# HW1 Image Processing Application

Deadline: 7/23

ranayukirin1991@mail.com

jameshuang20051118@gmail.com

## 1. Introduction:

The programming language allowed in this assignment included C#, MATLAB and Python. The most recommended language is Python.
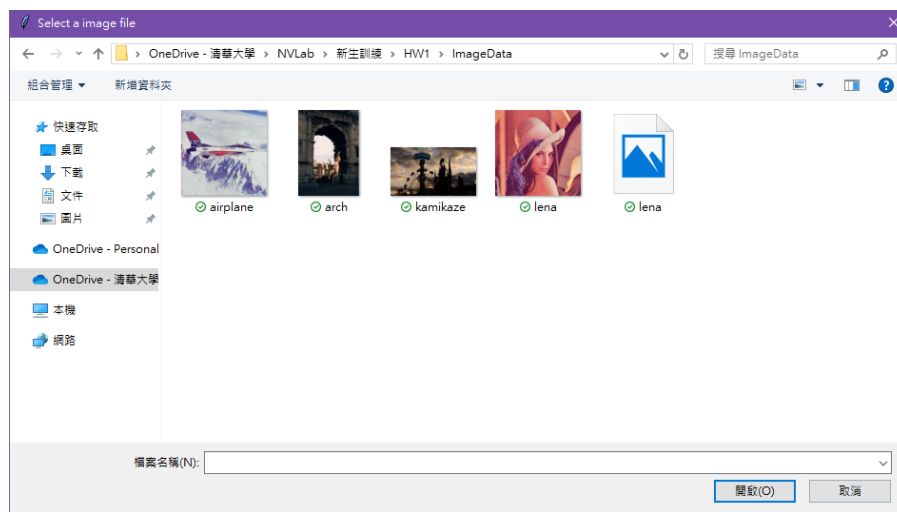
The crucial built-in functions are NOT allowed to use in this assignment. (Gamma corrections, histogram equalization, etc.)

Discussions are encouraged, but plagiarism is definitely NOT permitted.

## 2. Homework Problems

a. Read any format of images we provide (PNG, TIF, BMP, JPG and RAW) with dialog

Example:



b. Save enhanced image as JPG format with dialog
c. Histogram Equalization
d. Gamma Correction with user input bar
e. Image Inversion
f. Remove all the enhanced effect
g. GUI
   (1) All the functions mentioned above.
   (2) Any enhancement applied on image should be showed.
   (3) Any enhancement should be superimposable.

Example:

Image after histogram equalization should be able to be applied another enhancement like Gamma correction or inversion.

(4) More complete, the greater.

## 3. Upload Files

The complete files should be compressed into a ZIP file and send email to <u>ranayukirin1991@gmail.com</u>. The ZIP file should contain the following files:

a. Complete code files with comments

b. Complete image files including provided images and enhanced images

Provided images:

(1) airplane.png

(2) arch.tif

(3) kamikaze.bmp

(4) lena.jpg

(5) lena.raw



Enhanced images:

You should at least upload following specified enhanced images

(1) Brighter and clearer image of arch.tif and kamikaze.bmp

(2) Two images with histogram equalization

(3) Two images with Gamma correction

(4) Two images with inversion

c. Readme file

(1) Please explain how to run your code

(2) Environment and libraries

d. Report

(1) Discuss how the enhancement methods change the image

(2) Your thought about this homework

## 4. Possible utilities

python GUI

https://morvanzhou.github.io/tutorials/python-basic/tkinter/

python anaconda

https://www.anaconda.com/distribution/