

Submission Guideline

Outline

- Homework file format
 - Programming language
 - RUN
 - Image I/O
- Submission requirement
 - Source Code
 - Report



Homework File Format

Programming Language

- Python ≥ 3.6
 - numpy $\geq 1.19.5$
 - matplotlib (only for you)
 - OpenCV $\leq 4.5.x$
 - Pillow $\geq 5.x$
 - Matlab
 - Image processing toolbox
 - C/C++
 - OpenCV
 - [Installation guideline](#) (apt install libopencv-lib)
 - [Using OpenCV with gcc and CMake](#)
- Only for Image I/O and plotting**

For the C/C++ and MATLAB code, please provide instructions on how to execute the code within the report.

RUN

- Named RUN
 - RUN.sh for python
 - RUN.m for matlab
 - RUN.sh for c/cpp
- The file should include the following information:
 - Homework number
 - Your name
 - Your student ID #
 - Your email address

Python Example

- RUN.sh

```
# DIP Homework Assignment #1  
# Name: William Watt  
# ID #: x12345678  
# email: wwatt@csie.ntu.edu.tw  
python hw1.py --input input_path --output output_path
```

- Run your code

- sh RUN.sh

MATLAB Example

- RUN.m

```
% DIP Homework Assignment #1  
% Name: William Watt  
% ID #: x12345678  
% email: wwatt@csie.ntu.edu.tw  
hw1(input_path, output_path)
```

- Run your code

```
>>RUN
```

C/Cpp Example

- RUN
 - Please refer to [OpenCV](#) webpage.

```
# DIP Homework Assignment #1
# Name: William Watt
# ID : x12345678
# email: wwatt@csie.ntu.edu.tw
cmake
make
./hw1 input_path output_path
```

- Remember to link other libs you used
- Run your code

```
sh RUN.sh
```


Image I/O (Python example)

- read raw

```
img = np.fromfile('sample.raw', dtype = 'uint8')
```

- write raw

```
img.tofile("result.raw")
```

- write png

```
cv2.imwrite("result.png", img)
```

- read png

- grayscale image

```
img = cv2.imread("sample.png", cv2.IMREAD_GRAYSCALE) #1 channel
```

```
img = cv2.imread("sample.png") #3 channel
```

- color image

```
img = cv2.imread("sample.png") #3 channel
```

Image I/O (MATLAB raw example)

- Read raw file

```
fid=fopen(image_name, 'rb');  
pixel=fread(fid, inf, 'uchar');  
fclose(fid);
```

- Write raw file

```
fid = fopen('test.raw', 'wb');  
fwrite(fid, pixel, 'uchar');  
fclose(fid);
```

Image I/O (MATLAB png example)

- Grayscale image
- Color image

```
function hwl(image_name, output_name)
    img = imread(image_name); % # of channel: 3
    img = rgb2gray(img); % # of channel: 1

    % do your algorithm here

    imwrite(img, output_name);
end
```

```
function hwl(image_name, output_name)
    img = imread(image_name); % # of channel: 3

    % do your algorithm here

    imwrite(img, output_name);
end
```

Image I/O (C/Cpp raw example)

- Grayscale image

```
int main(){
    FILE *file;
    unsigned char image_data[SIZE][SIZE];
    file = fopen("sample.raw", "rb");
    fread(image_data, sizeof(unsigned char), SIZE*SIZE, file);
    fclose(file);

    // do some image processing task...

    file = fopen("result.raw", "wb");
    fwrite(image_data, sizeof(unsigned char), SIZE*SIZE, file);
    fclose(file);
    return 0;
}
```

- Color image

```
int main(){
    FILE *file;
    unsigned char image_data[3][SIZE][SIZE];
    file = fopen("sample.raw", "rb");
    fread(image_data, sizeof(unsigned char), SIZE* SIZE * 3, file);
    fclose(file);

    // do some image processing task...

    file = fopen("result.raw", "wb");
    fwrite(image_data, sizeof(unsigned char), SIZE* SIZE * 3, file);
    fclose(file);
    return 0;
}
```

Image I/O (C/Cpp jpg example)

- Grayscale image

```
#include <stdio.h>
#include <opencv2/opencv.hpp>
using namespace cv;
int main(){
    Mat img;
    img = imread("sample.jpg", IMREAD_GRAYSCALE); //1 channel
    img = imread("sample.jpg"); //3 channel

    //do some image processing task...

    imwrite("result.jpg", img);
    return 0;
}
```

- Color image

```
#include <stdio.h>
#include <opencv2/opencv.hpp>
using namespace cv;
int main(){
    Mat img;
    img = imread("sample.jpg"); //3 channel

    //do some image processing task...

    imwrite("result.jpg", img);
    return 0;
}
```

Submission Requirement

1. Source Code

+ - **hw1_x12345678/**

+ - RUN.sh

+ - mycode.py

+ - SampleImage/

+ - sample1.png

+ - sample2.png

.....

Do not include the result
images in the folder

一定要有最外層 folder

hw1_x12345678.zip

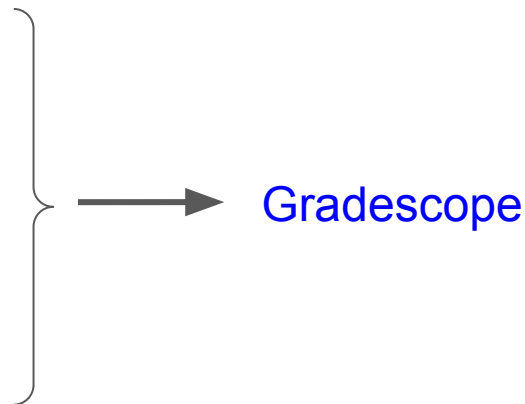


NTU COOL

2. Report

Every problems should contain:

1. Original_images
2. Output_images
3. Your **motivation and approach** (include parameters)
4. **Discussion** of results

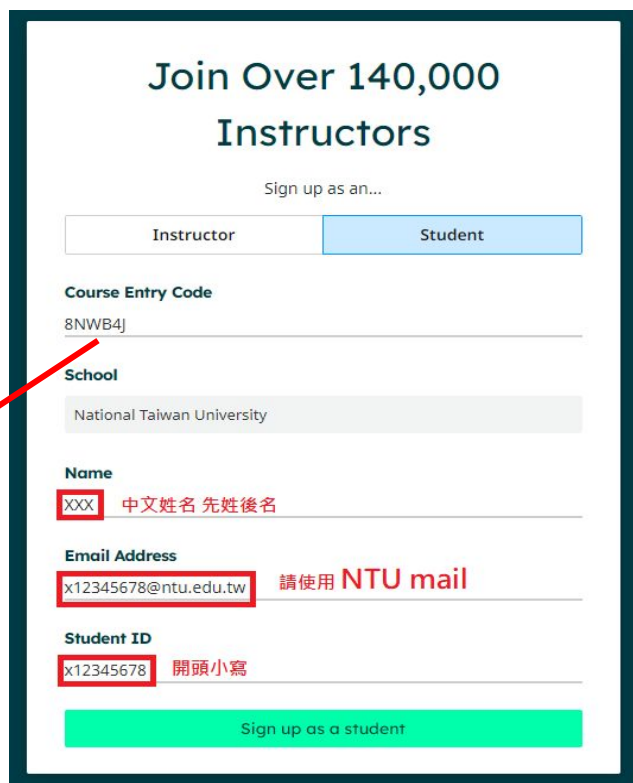


Please submit the REPORT file in PDF format.

Gradescope

<https://www.gradescope.com/>

1. Click Sign Up and choose sign up as a student
2. Enter Course Entry Code (**6G3RVW**)
3. Enter your name, school email, and student ID.
4. Then the system will send an email to your address to set up your password.



Join Over 140,000
Instructors

Sign up as an...

Instructor Student

Course Entry Code
8NWB4j

School
National Taiwan University


Name
XXX 中文姓名 先姓後名

Email Address
x12345678@ntu.edu.tw 請使用 NTU mail

Student ID
x12345678 開頭小寫

Sign up as a student

Gradescope

 < ☰


測試 101

測試


☰ 列表

🔄 重改申請

Instructor

 郭旻展

課程動作

 退出課程

測試 101 | Spring 2024

課程 ID : 745709

描述

測試用

名稱	狀態	發布時間	(CST) 截止 ▾
測試	● 沒有作答內容	Feb 29 at 1:57PM	剩餘 23 小時, 32 分鐘 Mar 01 at 1:57PM

Gradescope

The image shows the Gradescope web interface. On the left is a sidebar with the Gradescope logo, navigation links like '測試 101', '列表', '重改申請', 'Instructor', and '課程動作'. The main area displays '測試 101' for 'Spring 2021' with course ID 745709. A table lists tests, with one entry '沒有作答' (No Answer). A modal titled '儲存作業' (Save Assignment) is open, providing instructions on saving work. It includes a message: '您的教師已提供一份 PDF 來協助您完成作業。' (Your teacher has provided a PDF to help you complete the assignment.) and a button '下載 測試 PDF' (Download Test PDF). Below this, two options are shown: '提交影像' (Submit Image) with a camera icon and '儲存 PDF' (Save PDF) with a PDF icon. The '儲存 PDF' option is highlighted with a red box. At the bottom of the modal are links to download the app from the App Store and Google Play, and a '關閉' (Close) button. In the background, a progress bar indicates '剩餘 23 小時, 32 分鐘' (23 hours, 32 minutes remaining) and a deadline of 'Mar 01 at 1:57PM'.

gradescope

測試 101

課程 ID : 745709

描述

測試用

名稱

狀態

測試

沒有作答

儲存作業

儲存每個問題的影像，或單一 PDF。

您的教師已提供一份 PDF 來協助您完成作業。

下載 測試 PDF

提交影像

儲存 PDF

使用 Gradescope 行動裝置應用程式儲存作業。

Download on the App Store

GET IT ON Google Play

關閉

(CST) 截止

剩餘 23 小時, 32 分鐘

Mar 01 at 1:57PM

Gradescope


≡ >

測試

指派問題和頁面

繳交日期：February 29, 2:26 PM

請選擇問題和頁面以指示您的回應所在位置。請使用 **esc** 取消所選取所有項目，以及按住 **shift** 選擇多個問題。拖放頁面可進行重新調整，或者選擇一個頁面，然後使用鍵盤上的方向鍵進行調整。

題目列表

指派 2 個pages給問題。

標題	分數
1 Problem 0 P1 x	1.0 pt
2 Problem 1 P2 x	1.0 pt
3 Problem 2 P3 x P4 x	1.0 pt

✖

HW1: Problem 0: IMAGE ENHANCEMENT

Problem 0: IMAGE ENHANCEMENT

Problem 0: IMAGE ENHANCEMENT

1 Q1 x

✖

HW1: Problem 1: IMAGE ENHANCEMENT

Problem 1: IMAGE ENHANCEMENT

Problem 1: IMAGE ENHANCEMENT

2 Q2 x

✖

HW1: Problem 2: IMAGE ENHANCEMENT

Problem 2: IMAGE ENHANCEMENT

Problem 2: IMAGE ENHANCEMENT

3 Q3 x

✖

HW1: Problem 3: IMAGE ENHANCEMENT

Problem 3: IMAGE ENHANCEMENT

Problem 3: IMAGE ENHANCEMENT

4 Q3 x



已選取 2 個pages。請按一下問題，將pages指派給該問題。

依順序指派頁面 儲存

Gradescope

The screenshot displays the Gradescope interface for a homework assignment. The central area shows "HOMEWORK ASSIGNMENT 1" and "Problem 0: WARM-UP" with a blurred image. The right sidebar, titled "測試" (Test), lists three problems: "問題 1 Problem 0" (1 pt), "問題 2 Problem 1" (1 pt), and "問題 3 Problem 2" (1 pt). The bottom bar includes a "選擇問題" (Select Problem) dropdown, a "重新選擇頁面" (Re-select Page) button, a "下載原稿" (Download Original) button, a "作答歷程記錄" (Answer History) button, and a "重新提交" (Re-submit) button.

HOMEWORK ASSIGNMENT 1

Problem 0: WARM-UP

測試

● 待批改

學生
王小明

總分
- / 3 pts

問題 1
Problem 0 1 pt

問題 2
Problem 1 1 pt

問題 3
Problem 2 1 pt

所有頁面

選擇問題。

✓ 重新選擇頁面

下載原稿

○ 作答歷程記錄

重新提交

Grading Policy

- Program 30%
 - Format 10/30
 - Execution
 - Algorithm 20/30
 - Code running with a 10-minute time limit
- Report 70%
 - motivation and approach 20/70
 - performance of results 20/70
 - discussion 30/70

The regrade period is **3 days** after each homework's grade release

Hot to Submit regrade request:

<https://help.gradescope.com/article/8hchz9h8wh-student-regrade-request>

Remark

- Unix-Based environment is recommended
- If you use Windows system
 - [Windows Subsystem for Linux \(WSL\)](#)
 - bash in powershell
 - Anaconda
 - CSIE workstation
 - You may need X-server to show Image
- Compress the folder by **ZIP** only
- If you have any question, feel free to post on NTU COOL
- TA hour @532
 - Thu. 13:00~15:00
 - Fri. 10:00~12:00

Questions?