

# **Harbin Institute of Technology (Shenzhen)**

## **Image Processing Project Report**

**Experiment Name:** DIP.project1

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# Content

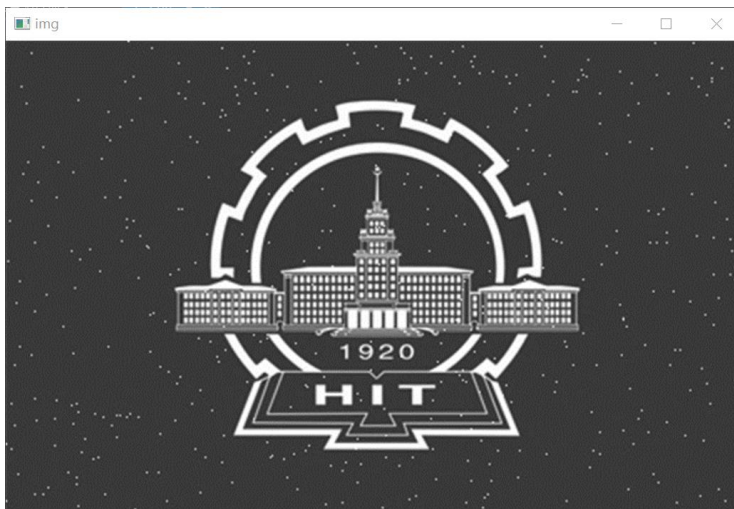
1 Project Content.....	1
2 Method Description.....	1
3 Experiment Results and Analysis.....	3
4 Summary.....	3

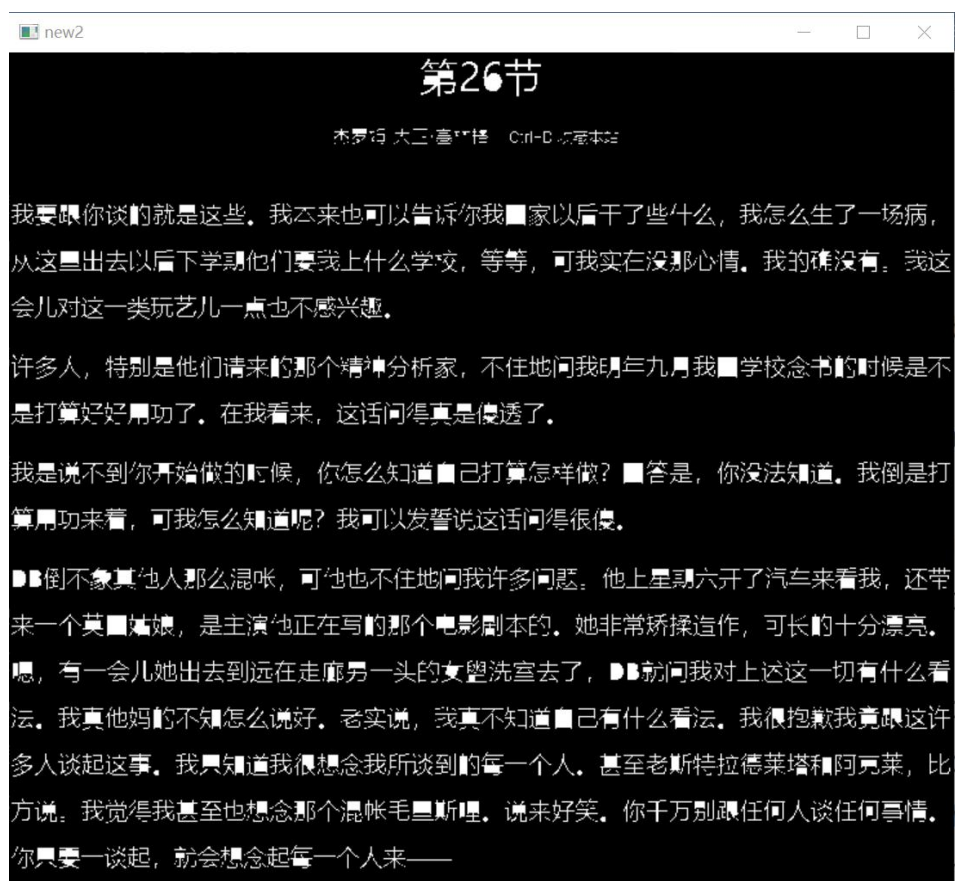
# 1 Project Content

Give a brief description of the project content.

- (1) use certain methods to process the photos to make their pixel distribution more balanced
- (2) keep the clarity of the school emblem as much as possible while denoising
- (3) fill the holes of all characters in ./Q2\_images called rye\_catcher\_c\_1 and rye\_catcher\_e\_1

result:





## 2 Method Description

Introducing the algorithms used in the project.

Please give the main processing steps.

(1) 1\_1

- ① make the grayhist of the image
- ② calculate the grayhist
- ③ get the relation of each point in the image before and after by the result of ③
- ④ use the relation to process each point of the image

(2) 1\_2

- ① realize the minimum filter :  
place each point of the image by the minimum in its  $3 \times 3$  neighbour
- ② process the image by the filter in ①

(3) 1\_3

- ① realize the dilation algorithms  
Process consists of obtaining the reflection of B, about its origin  
Then shifting this reflection, B, by x  
The dilation of A by B is the set of all x, displacements such that B and A overlap by at least one element
- ② dilate the image and compare to the color-shifted image, repeat this procession until reaching the edge of each region.

## 3 Experiment Results and Analysis

Illustrating the advantages and disadvantages of the algorithms based on the experiment results.

(1) Advantages:

Simple, easy to realize

(2) Disadvantage:

In 1.2, using the minimum filter, the image printed out contains some small dark point.

In 1.3, using the dilation realized by self, the image processing cost a long time

## 4 Summary

Describe the difficulties in doing the project.

- (1) At first it was a little difficult to realize the algorithms in Python because of first using. As the project went by it became easier.
- (2) Choosing the proper kind of filter costs some time by checking the results got by different filters

Summarize the knowledge learned in this project, and so on.

- (1) Realize DIP algorithms in Python
- (2) Using Python to make some simple DIP
- (3) Deeper understanding about these DIP algorithms after this project