CS270 - Digital Image Processing
ShanghaiTech University
Spring 2024

Project 2: Handwritten Text Recognition

1 Background

Text recognition, also known as Optical Character Recognition (OCR), is the process of converting printed or handwritten text into a machine-readable format. This technology is pivotal for transforming script from physical or digital images into editable text, enabling automated data entry, historical document digitization, and enhanced accessibility for handwritten inputs. The significance of text recognition lies in its ability to extract meaningful information from physical documents, supporting applications such as document digitization, text data analysis, and improved accessibility. In this project, you will implement text recognition on handwritten text.

Through text recognition, you should be able to identify text in images, for example: In Fig. 1:

Dear Mrs Green ...
Im so glad to hea...
(No requirement for punctuations (like "," "&" "-").)

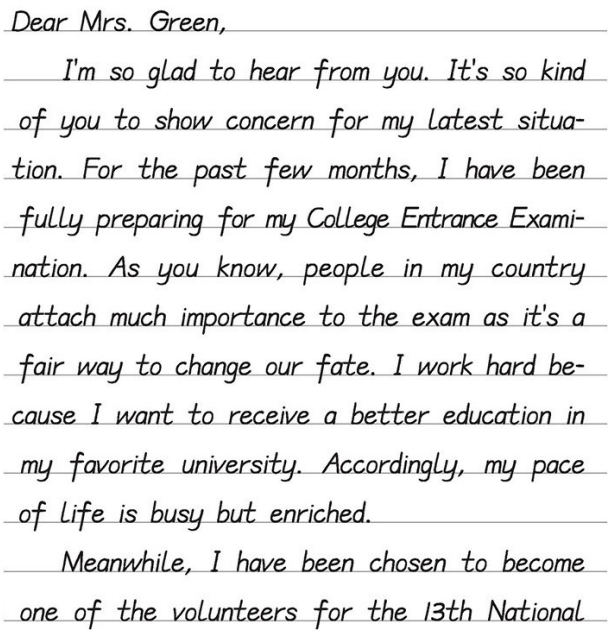

Figure 1: Handwritten English composition

2 Goal

In this project, you need to determine the position of the characters in the image, perform segmentation and recognition, and then calculate the recognition accuracy. **Attention: Please try to avoid calling built-in functions of your core algorithms, otherwise your rating will be negatively affected. Deep learning algorithms are prohibited.**

3 Checkpoints

(1) How do you eliminate the influence of lines and noise? (20 points)

(2) How do you segment the images for character recognition? (20 points)

(3) How do you recognize the characters? (neural networks are not allowed to use) (30 points)

(4) You should show the recognition accuracy rate of your program. (30 points)

$$\text{The recognition accuracy rate} = \frac{\text{Number of characters correctly extracted and recognized}}{\text{Total number of characters}}$$