

Computer Vision

Project III: Automatic License Plate Recognition

Project Deadline: June 13th, 2023

Evaluation Time: 7:00PM-9:00PM, June 13th, 2024

Presentation Date: June 14th, 2023

Objective:

Automatic License Plate Recognition (ALPR) is a typical application of computer vision technologies. This project aims to offer the opportunity for students to gain the experience of implementing an automatic license plate recognition system. Automatic License Plate Recognition (ALPR) is a process involving the following steps:

Step #1: Detect and localize a license plate in an input image/frame,

Step #2: Extract the characters from the license plate,

Step #3: Apply some form of Optical Character Recognition (OCR) to recognize the extracted characters.

Due to the vast diversity and variety of license plate types in individual states and countries, ALPR may be a difficult job for computer vision. The dynamic lighting conditions, such as reflections, shadows, blurs, rapid moving vehicles and various view angles and obstacles make it even more challenging to recognize license plates.

In this project, you will be given several videos and you need to detect and recognize all of the small vehicle license plates with white color plate background appear in the scene. The minimum plate size requirement is 140 x 30 (width x height). To put it another way, when the size of the license plate in the video is greater than 140 x 30 you have to recognize its number. The video file format is MP4. As attached files, you will find sample videos.

For simplicity's sake, you don't have to recognize the license plate of a motorcycle or a bus. You only need to recognize license plates with white color plate background of small vehicles.

Note:

1. You may find a partner to work together for this project. Inform TA regarding your partner's name by June 9th.
2. You may use any programming language to implement this project. You may also refer to some open-source codes. However, do not just apply the existing source code directly without modification.

Evaluation Metric:

Accuracy =

(total # of correct recognition characters)/ (total # of ground truth characters)

Evaluation Procedure:

1. On June 13, TA will give you a set of videos for testing at 7:00 PM in the online meeting.
2. You need to perform the recognition process and record the recognition results in a text file called " student_ID.txt (e.g., your student ID "712345678.txt")."
3. The following format of the resulting text file is used. Put the filename of the input video in each line of the text file, then follow the results of all the license plates you've recognized.
For example:
001 ANA0938
002 AAF0319
003 ABC1234 CDE2188 1963FU
.....
4. Email your result text file to the TA by 7:20 p.m.. The results from the assessment will then be sent to you by TA.
5. Please let TA know if you'd like to run a second test. You're allowed to modify your program at this time. Please contact TA and request the new test data as soon as possible if you are able to perform a 2nd test.
6. In 20 minutes, you need to send the results to TA.
7. Notice that you have two chances for evaluations. The most recent results you have provided to TA will be the basis for your final evaluation score. At 9 o'clock the evaluation will be closed.

Project Grading Policy

1. (60%) The ranking of accuracy from TA's evaluation.
2. (40%) Presentation: share your findings or experiences.

Note: Your project score is 60 percent based on the accuracy index ranking of all students in descending order. There are 22 students in the class. The rank-one student shall receive 95, the rank-two student shall receive 94, and the lowest rank student shall receive 74. However, your score shall be taken into account on the basis of accuracy index when you have an accuracy index above 0.95.