

Video-based license plate reader

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Introduction:

Automatic number plate recognition (ANPR), also known as automatic license plate reader, was invented in 1976 in at the Police Scientific Development Branch in the UK and now widely used in police forces worldwide. It involves many fundamental digital image processing techniques including match filtering, edge detection, character recognition, and so on, to make it a great topic for entry level practice. Also it is still an active topic nowadays to solve new challenges such as reliability over different illumination and other environmental condition, accuracy of the recognition, and also from lower-resolution images as the computing hardware gets cheaper and ANPR goes to more people beyond the police forces.

Goal:

This project is not to compete with existing commercial softwares for road-rule enforcement cameras or closed-circuit television to make it more robust under different environmental conditions. The goal of this project is to detect and recognize the license plate information by analyzing videos from personal devices, such as cell phones and camera carried by hobby drones, which usually has low resolution or speed limit.

Implementation

I searched the old projects from the class history and found one similar project has been done from two students in 2009. But when I look closer their project report who analyzed a picture in a parking lot, highlighting the location of the license plates in the image instead of recognize the plate information, I think I can do something different.

I plan to analyze data from videos, have illumination uniformity correction, transform plate to correct skew, apply edge detection, match filtering to recognize the letters and numbers on the plate and report them. I will also test if I can use videos to enhance the accuracy and resolution since the camera might under-sample the plate or signal too noisy in a single frame from the hardware limit.

Reference:

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I will not use an Android device.