

Smartphone-based Automatic License Plate Recognition  
EE 368 / Psych 221 Final Project Proposal

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Automatic license plate recognition (ALPR) is a familiar problem. Among other applications, U.S. intersection cameras send out tickets and British CCTV records the movements of cars throughout the country. As smaller processors and cameras continue to become cheaper and more widely available, problems like ALPR appear more likely to be solved using inexpensive consumer hardware.

Though it is unlikely that a person would use an application that recognizes and decodes license plates in real-time, rather than just snap a picture, the idea here is to attempt to implement such functionality using images captured from a lower quality camera than is typically used and, ideally, with algorithms that could be ported to a smartphone.

Specifically, the goal of the project is to explore vision algorithms for recognizing license plates in an image, and subsequently interpret the characters contained in the plate. Moreover, the algorithms will be run on a PC that is in (WLAN) communication with a Motorola Droid phone, possibly allowing for real-time display of results on the phone's viewfinder.

The task will be broken into distinct sections. First, the effect on recognition rates of several color transformations and balancing schemes will be examined, including using the CIELAB color space. Second, image patches that potentially contain license plates will be extracted, likely based on morphological operations, scale-invariant detectors such as SIFT, and proprietary methods designed specifically for the task. Third, the pose of the license plate will be estimated and the characters transformed for more accurate recognition. Fourth and finally, character recognition will be performed on these regions of interest and decision criteria will be devised to choose when to output a result.

References:

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