

A LICENSE PLATE SEGMENTATION MODEL FOR CARS IN MALAYSIA

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ABSTRACT. *Automatic license plate recognition (ALPR) has a crucial role in a wide variety of applications. Numerous techniques have been developed for ALPR applications under various conditions. However, most of the works were carried out under restricted conditions [1], such as fixed illumination, stationary backgrounds etc. In this paper, a proposed algorithm, which utilized three processes to perform license plate detection and extraction, is discussed. A complete real-time automatic license plate recognition system was set up in an outdoor environment in Malaysia to evaluate the proposed algorithm. The results revealed that the real-time system can achieve an average percentage of about 90% good extraction of the 108 real-time video images. The good extraction percentage from 589 images taken from digital camera is 86%. The experimental setup in the outdoor environment was affected by variation in illumination conditions.*

Keywords: Automatic license plate recognition, License plate segmentation/extraction technique, Outdoor environment, Local cars in Malaysia

1. **Introduction.** ALPR is normally divided into four main modules; namely vehicle/object detection, license plate segmentation, character segmentation and character recognition. Each and every module mentioned above plays a crucial role in the overall reliability of the developed system. Thus, none of them should be compromised in any given situation. However, higher priority should be placed on the license plate segmentation algorithm as it is the root of the algorithm, and its reliability greatly influences the performance of its subsequent processes involving the character segmentation and recognition modules.

In view of the increasing requirements of a commercial ALPR system, a vast amount of research has been conducted in the area of license plate segmentation, as reported by Chang et al [1]. Some of these works are based on features of the license plate and others are based on the edge statistics and morphology. Recent research has even brought the implementation of license plate segmentation utilizing modern techniques, such as the wavelet transform and genetic algorithms. One of the proposed algorithms is based on