

EGYPTIAN LICENSE PLATE RECOGNITION USING ENHANCED STROKE WIDTH TRANSFORMATION AND FUZZY ARTMAP

¹Alaa Mohamed Youssef, ²Mohamed S. El-Mahallawy and ³Amr Badr

¹College of Computing and Information Technology,

²College of Engineering and Technology,

Arab Academy for Science, Technology and Maritime Transport, Sheraton, Cairo, Egypt ³Department
of Computer Science, Faculty of Computers and Information, Cairo University, Giza, Egypt

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ABSTRACT

License Plate Recognition (LPR) is the most important type of Intelligent Transportation System (ITS). LPR is used in many different types of ITS like electronic payment systems, toll station, parking fees, freeway and arterial management systems for traffic surveillance. Few years ago, Egyptians government changed the car license plate to include letters and numbers. So the needs for efficient LPR System for the new license plate are increased in different ITS fields. This study presents an enhanced LPR detection algorithm for the new Egyptian licenses plate. The detection enhancement is done using Stroke Width Transform algorithm to extract letters from candidate areas combined with Fuzzy ARTMAP classifier. Stroke Width Transform (SWT) is a state of art algorithm developed by Microsoft Research Lab for detecting text in natural scene, it seeks to find the value of stroke width for each image pixel and demonstrate its use on the task of text detection in natural images. This study is focusing on detecting Arabic letters in the candidate license plate area using SWT image map instead of binary image map where not all Arabic letters have uniformly stroke width and some letters have a dot above and below it. The proposed model shows 26% detection accuracy enhancement than conventional LPR systems (Sobel Edge detection with binary image map using template matching technique).

Keywords: Image Processing, License Plate Recognition (LPR), License Plate Segmentation, Stroke Width Transformation, Optical Character Recognition (OCR), Fuzzy ARTMAP, Template Matching
