



Arabic License Plate Recognition Using Deep Learning Techniques

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ABSTRACT

Automatic License Plate Recognition (ALPR) has become an integral part of the new ecosystems to ensure safety and traffic management. It has many challenges because it is affected by many parameters, such as the country's layout, colors, language, fonts, and several environmental conditions. So, there isn't a unified ALPR system for all countries. Many ALPR methods were based on traditional image processing and machine learning algorithms since there weren't enough datasets, particularly in the Arabic language. We proposed a real-time ALPR system for Egyptian license plate (LP) detection and recognition using Tiny-YOLOV3. It consists of two deep convolutional neural networks. Also, a large-scale dataset has been proposed, namely Egyptian Automatic License Plate Recognition (EALPR), to address this issue. Instaloader and selenium Web scraping techniques are used to capture photos from social networking platforms. The YOLO detector is used for annotation after cleaning and sanity tests. The total number of vehicles is 2,450, including different locations, times (night and day), and backgrounds to guarantee the balance of the dataset. The experimental results in the first publicly available EALPR dataset show that the proposed system is more robust in detecting and recognizing the Egyptian license plates and gives Mean Average Precision (MAP) values of 97.89% for plate detection and 92.46% for character recognition.