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[Performance Comparison of the Deep Segmentation Methods on License Plate Detection](#)

Technology Reports of Kansai University (Issue: 03) (Volume: 62)

Automatic License Plate Detection and Recognition (ALPD-R) is used in traffic, security and parking management systems. In this paper, deep semantic segmentation methods are used for license plate detection. Three different deep segmentation methods are considered in license plate segmentation. They are SegNet, Fully Convolutional Network (FCN) and Densely-Connected and Concatenated-Multi-Encoder-Decoder (DCCMED) network. These models are further trained on the same training data set and tested accordingly. Visual and numeric evaluations are used to validate the performance of the proposed work. Recall, precision and F-measure values are calculated. According to the obtained

results, FCN outperforms the recall, precision and F-measure values are 0.6410, 0.9043 and 0.7491, respectively. The DCCMED produces the second best evaluation scores where obtained scores are 0.4955, 0.9188 and 0.6493. Finally, the worse segmentation scores are produced by SegNet architecture. Its achievements are 0.4916, 0.7704 and 0.5913, respectively. Hence, the DCCMED's precision value is higher than the SegNet's and FCN's precision value.

Feb, 2020

[Cascaded deep learning-based efficient approach for license plate detection and recognition](#)

Expert Systems With Applications (Volume: 149)

Automatic license plate (ALP) detection and recognition is an important task for both traffic surveillance and parking management systems, as well as being crucial to maintaining the flow of modern civic life. Various ALP detection and recognition methods have been proposed to date. These methods generally use various image processing and machine learning techniques. In this paper, a cascaded deep learning approach is proposed in order to construct an efficient ALP detection and recognition system for the vehicles of northern Iraq. The license plates in northern Iraq contain three regions, namely a plate number, a city region, and a country region. The proposed method initially employs several preprocessing techniques such as Gaussian filtering and adaptive image contrast enhancement to make the input images more suited to further processing. Then, a deep semantic segmentation network is used in order to determine the three license plate regions of the input image. Segmentation is then carried out via deep encoder-decoder network architecture. The determined license plate regions are fed into two separate convolutional neural network (CNN) models for both Arabic number recognition and the city determination. For Arabic number recognition, an end-to-end CNN model was constructed and trained, whilst for the city recognition, a pretrained CNN model was further fine-tuned. A new license plate dataset was also constructed and used in the experimental works of the study. The performance of the proposed method was evaluated both in terms of detection and recognition. For detection, recall, precision and F-measure scores were used, and for recognition, classification accuracy was used. The obtained results showed the proposed method to be efficient in both license plate detection and recognition. The calculated recall, precision and F-measure scores were 92.10%, 94.43%, and 91.01%, respectively. Moreover, the classification accuracies for Arabic numbers and city labels were shown to be 99.37% and 92.26%, respectively.

CONFERENCE

Nov, 2019 - Nov, 2019

[An Efficient Model for Automatic Number Plate Detection Using HOG feature from New North Iraq – Vehicle Images Dataset](#)

Turkey, Ankara, Turkey As Presenter

The increasing number of vehicles in all over the world day by day, have made traffic control becomes a serious and major problem. Sometimes, it becomes difficult to detect the plate license number of a vehicle that violates traffic rules. In this paper, an efficient model is proposed to detect and locate number license plate of a vehicle that is given in color images. The model is constructed by using different features instead of single feature to improve its performance based on multi descriptors (texture features). The work use multi-boosting model (AdaBoost) based on HOG descriptors, which precisely localize the ROI of the given vehicle images. A new North Iraq Vehicle Images (NI-VI) dataset, which is used to test the proposed model, is introduced. The license number plates of North Iraq uses Arabic font. All images of this dataset, are taken under various circumstances and different weather conditions to simulate all realistic examples about vehicles. The developed model produced 89.66% accuracy score.

Nov, 2019 - Nov, 2019

[Development of New Anpr Dataset for Automatic Number Plate Detection and Recognition in North of Iraq](#)

Turkey, Ankara, Turkey As Presenter

An automatic number plate detection (ANPD) and automatic number plate recognition (ANPR) systems are robust technologies that are used for detecting and recognizing the number plates of vehicles. In this paper, a new dataset, which is called North Iraq-Vehicle Images (NI-VI) of three provinces (Duhok, Erbil, and Sulaimani) for vehicle images, is presented. There are 1500 images in this dataset. They were gathered from real-time by using handled cameras to form a realistic dataset of the vehicle images. The main contribution of this work is the creation of a new dataset for license plate of vehicles in north Iraq with Arabic fonts in different and difficult conditions. The dataset includes three categories of images: rotated, scaled and translated images. The resolutions of images are 4288 x 2848 and 5184 x 3456. Moreover, some images created for bad weather conditions, such as snowy, dusty and low lighting. Some dirty plate images also considered in the dataset. The purpose of introducing this dataset is to provide and produce a realistic dataset for ANPD and as well as for ANPR systems.