

عنوان مقاله:

Implementation of Modular Neural Network based Algorithm on GPU for Persian License Plate Recognition

محل انتشار:

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خلاصه مقاله:

There are different types of algorithms for recognizing license plate. Among all of them, the methods based on neural network have shown desired results. In this paper, Persian license plate character recognition algorithm is implemented on Graphics Processing Unit (GPU) in order to speed up recognizing. Since Persian license plate consists of 7 numbers and a letter, two similar neural networks which are trained for numerals and letters, are used to decrease time consuming of recognizing these characters. The characters of Persian license plate are selected from 9 numbers and 16 letters. So, 9 classes for numeral neural network and 16 classes for letter neural network have to be recognizable. In this paper, the class-modularity based on 2-layer Perceptron neural network is used. It is demonstrated that class-modular neural networks increase the speed of convergence in the step of training and increase accuracy of recognizing. GPUs support up to multi thousands threads which are used for parallel computing applications. Furthermore, the structure of Multi-Layer Perceptron (MLP) neural network is compatible with parallel computation and it is capable to be implemented on GPU. Thus, we implement the neural network on GPU by using CUDA codes which consist of different number of kernel functions. The proposed algorithm which is executed on GPU is 2 to 34 times faster than on CPU.

کلمات کلیدی:

Persian License Plate Recognition; Multi-Layer Perceptron Neural Network; Back Propagation Algorithm; Class modularity; Graphics Processing Unit

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