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Backpropagation neural ensemble for localizing and recognizing non-standardized Malaysia's car plates

Abstract

In this paper, we describe a research project that autonomously localizes and recognizes non-standardized Malaysian's car plates using conventional Backpropagation algorithm (BPP) in combination with Ensemble Neural Network (ENN). We compared the results with the results obtained using simple Feed-Forward Neural Network (FFNN). This research aims to solve four main issues; (1) localization of car plates that has the same colour with the vehicle colour, (2) detection and recognition of car plates with varying sizes, (3) detection and recognition of car plates with different font types, and (4) detection and recognition of non-standardized car plates. The non-standardized Malaysian's car plates are different from the normal plate as they contain italic characters, a combination of cursive characters, and different font types. The experimental results show that the combination of backpropagation and ENN can be effectively used to solve these four issues. The combination of BPP and ENN's algorithm achieved a localization rate of 98% and a 97% in recognition rate. On the other hand, the combination of backpropagation and simple FFNN recorded a 96% recognition rate.