COMPLEXITY REDUCTION IN NEURAL NETWORKS APPLIED TO TRAFFIC SIGN RECOGNITION TASKS (WedPmPO2)

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Abstract :

This paper deals with the application of Neural Networks (NNs) to the problem of Traffic Sign Recognition (TSR). The NN chosen to implement the TSR system is the Multilayer Perceptron (MLP). Two ways to reduce the computational cost in order to facilitate the real time implementation are proposed. The first one reduces the number of MLP inputs by pre−processing the traffic sign image (blob). Important information is kept during this operation and only the redundancy contained in the blob is removed. The second one looks for neural networks with reduced complexity by selecting a suitable error criterion for training. Two error criteria are studied: the Least Square error (LS) and the Kullback−Leibler error criteria. The best results are obtained using the Kullback−Leibler error criterion.

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