Improving the Neural Network Training for Face Recognition using Adaptive Learning Rate, Resilient Back Propagation and Conjugate Gradient Algorithm

Abstract

Face recognition is a method for verifying or identifying a person from a digital image. In this paper an approach for classifying images based on discrete wavelet transform (DWT) and neural network (NN) has been suggested. In the proposed approach, DWT decomposes an image into images with different frequency bands. An NN is a trainable and dynamic system...
which can acceptably estimate input-output functions. Although the basic BP has been the most popular learning algorithm throughout all NNs applications and can be used as estimator, detector or classifier. It usually requires a very long training time. To overcome the problem, we propose several high performance algorithms that can converge few times faster than the algorithm used previously (basic BP). In this paper, the BP with adaptive learning rate, resilient back propagation (RPROP), and conjugate gradient algorithm are used to train an MLP. The simulation results show the clear superiority of the proposed method by ORL face databases.

Reference

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Improving the Neural Network Training for Face Recognition using Adaptive Learning Rate, Resilient Backpropagation, and Conjugate Gradient Algorithm

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Index Terms

Computer Science
Pattern Recognition

Key words

Face recognition
Discrete wavelet transform (DWT)
Back

Adaptive learning rate

Resilient BP (RPROP)

Conjugate gradient algorithm