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

- J. Daugman, “Face and gesture recognition: overview”. IEEE Transactions on Pattern
- L. Wiskott, J. Fellous, N. Kruger and C. Malsburg, “Face recognition by elastic bunch
- M. Firdaus, “Face recognition using neural networks”, International Conference on
  Intelligent System (ICIS), CD-ROM, 2005.
- M. Firdaus, “Dimensions reductions for face recognition using principal component
  analysis”, Proc. 11th International Symp artificial life and robotics (AROB 11th 06), CD-ROM
  2006.
- L. sufen and G. junying, “Face recognition algorithm based on Local wavelet transform
- Y. A. Georghiades, P. Belhumeur and D. Kriegman, “From few to many: illumination cone
  models for face recognition under variable lighting and pose” IEEE Transactions Pattern
  Min and W. Worek, “Overview of the face recognition grand challenge,” IEEE Computer Society
- M. Ghazel, “Adaptive fractal and wavelet image denoising”, Waterloo, Ontario, Canada,
  2004.
- M. R. Mosavi, “Precise real-time positioning with a low cost GPS engine using neural
- C. Igel and M. Husken, “Empirical evaluation of the improved RPROP learning
- F. Paulin and A. Santhakumaran, “Classification of breast cancer by comparing back
  propagation training algorithms”, International Journal on Computer Science and Engineering,
- D. L. Donoho, “Nonlinear wavelet methods for recovery of signals, densities, and spectra
- M. R. Mosavi and H. Azami, “Applying neural network ensembles for clustering of GPS
Improving the Neural Network Training for Face Recognition using Adaptive Learning Rate, Resilient Backpropagation and Conjugate Gradient Algorithm

- I. Ahmad, M. A. Ansari and S. Mohsin, “Performance comparison between backpropagation algorithms applied to intrusion detection in computer network systems”, International Conference on Neural Networks, pp. 231-236, 2008.

Index Terms

Computer Science Pattern Recognition

Key words

Face recognition Discrete wavelet transform (DWT)
Adaptive learning rate Back
Resilient BP (RPROP)
Conjugate gradient algorithm