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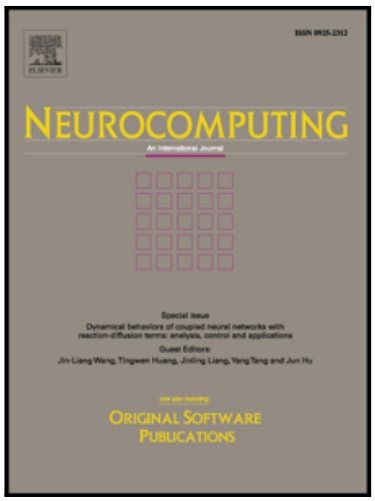

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A Gabor-based Network for Heterogeneous Face Recognition

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Abstract

In this paper, we propose a single hidden-layer Gabor-based network for heterogeneous face recognition. The proposed input layer contains novel computational units which propagate geometrically localized input image sub-blocks to hidden nodes. The propagated pixels are then convolved with a set of Gabor kernels followed by a randomly weighted summation and a non-linear activation function operation. The output layer adopts a linear weighting scheme which can be deterministically estimated similar to that in extreme learning machine. Our experiments on three experimental scenarios using BERC visual-thermal infrared database and CASIA visual-near infrared database show promising results for the proposed network.

Keywords: Heterogeneous Face Recognition, Gabor Features, Extreme Learning Machine, Random Weighting

1. Introduction

Heterogeneous face recognition refers to person identification by means of matching face images from different imaging modalities [1]. While the matching pair can involve any two different imaging modalities, the scenario of matching non-visual probe

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☆☆This work was performed when Beom-Seok Oh was with Yonsei University.
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