Accepted Manuscript

Patch-based Face Recognition using a Hierarchical Multi-label Matcher

L. Zhang, P. Dou, I.A. Kakadiaris

PII: S0262-8856(18)30027-1
DOI: doi:10.1016/j.imavis.2018.03.004
Reference: IMAVIS 3678

To appear in: *Image and Vision Computing*

Received date: 16 September 2017
Revised date: 15 February 2018
Accepted date: 16 March 2018

Please cite this article as: L. Zhang, P. Dou, I.A. Kakadiaris, Patch-based Face Recognition using a Hierarchical Multi-label Matcher, *Image and Vision Computing* (2018), doi:10.1016/j.imavis.2018.03.004

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Patch-based Face Recognition using a Hierarchical Multi-label Matcher

L. Zhang, P. Dou, I.A. Kakadiaris

Computational Biomedicine Lab, 4849 Calhoun Rd, Rm 373, Houston, TX 77204

Abstract

This paper proposes a hierarchical multi-label matcher for patch-based face recognition. In signature generation, a face image is iteratively divided into multi-level patches. Two different types of patch divisions and signatures are introduced for 2D facial image and texture-lifted image, respectively. The matcher training consists of three steps. First, local classifiers are built to learn the local matching of each patch. Second, the hierarchical relationships defined between local patches are used to learn the global matching of each patch. Three ways are introduced to learn the global matching: majority voting, ℓ_1-regularized weighting, and decision rule. Last, the global matchings of different levels are combined as the final matching. Experimental results on different face recognition tasks demonstrate the effectiveness of the proposed matcher at the cost of gallery generalization. Compared with the UR2D system, the proposed matcher improves the Rank-1 accuracy significantly by 3% and 0.18% on the UHDB31 dataset and IJB-A dataset, respectively.

Keywords: Face recognition, convolutional neural network, hierarchical multi-label classification

1. Introduction

Face recognition is an active topic for researchers in the fields of biometrics, computer vision, image processing and machine learning. In the past decades, both global

Email addresses: lzhang@34@uh.edu (L. Zhang), pdou@uh.edu (P. Dou), ioannisk@uh.edu (I.A. Kakadiaris)

Download English Version:

https://daneshyari.com/en/article/6937714

Download Persian Version:

https://daneshyari.com/article/6937714

Daneshyari.com