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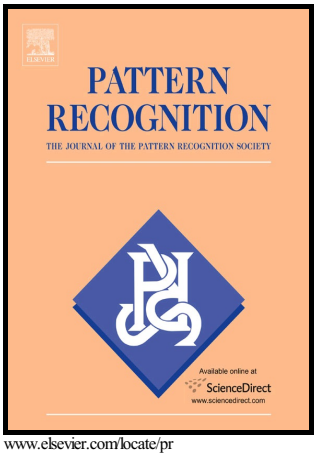

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PII: S0031-3203(16)30338-7
DOI: http://dx.doi.org/10.1016/j.patcog.2016.10.022
Reference: PR5930

To appear in: *Pattern Recognition*

Received date: 24 April 2016
Revised date: 21 September 2016
Accepted date: 19 October 2016

Cite this article as: Baoyuan Wu, Bao-Gang Hu and Qiang Ji, A Coupled Hidden Markov Random Field Model for Simultaneous Face Clustering and Tracking in Videos, *Pattern Recognition,* http://dx.doi.org/10.1016/j.patcog.2016.10.022

A Coupled Hidden Markov Random Field Model for Simultaneous Face Clustering and Tracking in Videos

Baoyuan Wu[a,b,*], Bao-Gang Hu[a], Qiang Ji[c]

[a]*National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences, Beijing, P.R. China, 100190*
[b]*Visual Computing Center of King Abdullah University of Science and Technology, Kingdom of Saudi Arabia, 23955-6900*
[c]*Department of Electrical, Computer, and Systems Engineering, Rensselaer Polytechnic Institute, Troy, NY, USA, 12180*

Abstract

Face clustering and face tracking are two areas of active research in automatic facial video processing. They, however, have long been studied separately, despite the inherent link between them. In this paper, we propose to perform simultaneous face clustering and face tracking from real world videos. The motivation for the proposed research is that face clustering and face tracking can provide useful information and constraints to each other, thus can bootstrap and improve the performances of each other. To this end, we introduce a Coupled Hidden Markov Random Field (CHMRF) to simultaneously model face clustering, face tracking, and their interactions. We provide an effective algorithm based on constrained clustering and optimal tracking for the joint optimization of cluster labels and face tracking. We demonstrate significant improvements over state-of-the-art results in face clustering and tracking on several videos.

Keywords: Face clustering, face tracking, Coupled Hidden Markov Random Field

*This is the corresponding author.
Email addresses: wubaoyuan1987@gmail.com (Baoyuan Wu), bghu@nlpr.ia.ac.cn (Bao-Gang Hu), qji@ecse.rpi.edu (Qiang Ji)