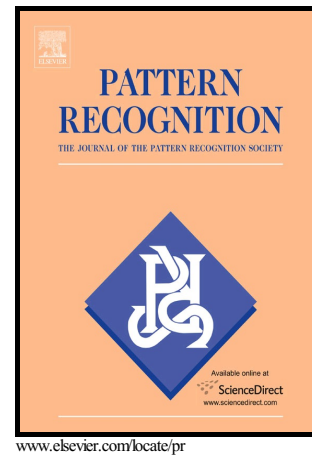


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# Regression Facial Attribute Classification via Simultaneous Dictionary Learning

**Ali Moeini<sup>a\*</sup>, Hossein Moeini<sup>b</sup>, Armon Safai<sup>c</sup>, and Karim Faez<sup>a</sup>**

<sup>a</sup>Electrical Engineering Department, Amirkabir University of Technology, Tehran, Iran.

<sup>b</sup>Electrical Engineering Department, Semnan University, Semnan, Iran.

<sup>c</sup>Computer Science and Engineering Department, University of California, San Diego, California, USA.

\*Corresponding author: Ali Moeini, Amirkabir University of Technology, Department of Electrical Engineering, Tehran, Iran Tel.: +98 2164543328; fax: +98 2166406469. E-mails: ali.moeini1989@gmail.com, ali.moeini.ir@ieee.org.

Abstract

Recently, many researchers have attempted to classify Facial Attributes (FAs) by representing characteristics of FAs such as attractiveness, age, smiling and so on. In this context, recent studies have demonstrated that visual FAs are a strong background for many applications such as face verification, face search and so on. However, Facial Attribute Classification (FAC) in a wide range of attributes based on the regression representation -predicting of FAs as real-valued labels- is still a significant challenge in computer vision and psychology. In this paper, a regression model formulation is proposed for FAC in a wide range of FAs (e.g. 73 FAs). The proposed method accommodates real-valued scores to the probability of what percentage of the given FAs is present in the input image. To this end, two simultaneous dictionary learning methods are proposed to learn the regression and identity feature dictionaries simultaneously. Accordingly, a multi-level feature extraction is proposed for FAC. Then, four regression classification methods are proposed using a regression model formulated based on dictionary learning, SRC and CRC. Convincing results are

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