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Face recognition based on multi-scale local mapped pattern

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Face recognition technology is a hot topic of research in the field of image processing and computer vision. Face feature has very high reference value in the identification, because it is easy to collect the characteristics. Face recognition technology is widely applied in many systems related to information and public safety. In this work, it is presented about the face recognition algorithm based on a latest version of multi-scale local mapped pattern method. The local binary pattern and its extended forms, such as mean local mapped pattern and multi-scale local binary pattern, were developed with the purpose of analyzing textures in images. Such methods compare histograms generated by micropatterns extracted from textures. A micropattern may be understood as a structure formed by pixels and its respective gray levels capable of describing or representing a spatial context of some feature found in the image, such as borders, corners, texture and even more complex and abstract patterns, like those found in a face image. In the MSLBP, a histogram is built in each scale with the values generated by image patterns smoothened by the Gaussian filtering. The LMP technique consists of smoothening the image gray levels from the mapping made through a pre-defined function. For each image pixel, the mapping of the region is made of a specific region of its neighbors. In the face features description problem, the LMP technique presented excellent results in considering the average of the locally mapped patterns, whereas the MSLBP, working in several scales, also reached higher performance compared with the original LBP. Thus, in this work we propose a new technique combining the LMP method and a latest version of the MSLBP method, herein referred to as MSLMP (Multi-Scale Mean Local Mapped Pattern). The proposal of this novel approach is to extract micropatterns and to attenuate noisy actions often occurring in digital images. Therefore, in this talk we will present some results of the method applied on face image of some well-known face Database, such as ESSEX, JAFE and ORL. The experiments have been carried out so far suggest that the presented technique provides detections with higher performance than the results presented in the state-of-the-art research in the specialized scientific literature. For the mentioned databases, the results have reached 100% of accuracy, using 7 scales of the proposed method.

Biography

Inês Aparecida Gasparotto Boaventura graduated in Mathematics at Sao Paulo State University, UNESP, Brazil. She has completed her Master's in Computer Science and Computational Mathematics and, PhD in Electrical Engineering at University of Sao Paulo (USP). She has experience in Computer Science, focusing on Graphical Processing (Graphics), and acting on the following subjects: Biometrics, Image Processing, and Computer Vision. She is a full-time Professor and Head of the Department at Department of Computer Science and Statistics at UNESP, campus of Sao Jose do Rio Preto, Sao Paulo, Brazil. In 2011-2012 she was a visiting Researcher at PRIP Laboratory – CSE – Michigan State University.

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