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LGVP histograms for text-independent writer Identification

BAHRAM Tayeb ^{*,1}

¹ Geometry, Analysis, Control and Applications Laboratory, Faculty of Sciences, Department of mathematics, University of Saida - Dr Tahar Moulay, 20100 Saida, Algeria

***Correspondence:**

BAHRAM Tayeb – Email: Tayeb.bahram@univ-saida.dz, tbahram@laposte.net

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Abstract

The problem of authenticating a writer from his/her writing samples has been the most important and prevalent subject of active research in the field of handwriting biometrics for the last decade. In this paper, we have focused mainly on the forensic document analysis, more precisely, the offline automatic writer identification in a truly text-independent mode. Two new and simple potential textural descriptors have been analyzed for characterising handwriting style of the writers, so as to be used to describe the intra and inter-writer variability by calculating the similarity measurements. In order to capture the textural information in a scanned image, two effective statistical texture descriptors are extracted from binary connected-components: the first one is based on the Black pixels of the connected components Local BLack Patterns (LBLP), while the second is based on the White pixels of the latter Local WHite Patterns (LWHP); after that, a combination of these descriptors Local Black and White Patterns (LBWP) is performed. Classification is carried out using k-nearest neighbors and the Chi-Square distance with the simplest kind of cross validation: Holdout. The experimental results obtained on four well-known databases show that the proposed scheme achieves a very satisfactory performance and thus reflecting that our approach is among the best compared in the state-of-the-art.

Key words: Feature extraction, Local Black Patterns, Local White Patterns, Writer identification, Texture