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Face Recognition Attendance System Method Based on Fusion of LBP and HOG

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Abstract: *As one of the hot topics in the field of computer vision research, face recognition technology has received significant attention due to its potentiality for a wide range of applications in government as well as commercial purposes. In practical applications, although several existing face recognition methods have achieved good performances in specific scenes, they easily suffer from a sharp decline in recognition rate if affected by different conditions of light, expression, posture and occlusion. Among many factors, influences of complex illuminations on face recognition are particularly significant. To further improve the performance of the existing local binary pattern (LBP) operator, neighbourhood weighted average LBP (NWALBP) is first proposed for fully considering the strong correlations between pixel pairs in the neighbourhood, which extends the traditional LBP uni-layer neighbourhood template window to the bi-layer neighbourhood template window and calculates the weighted average of bi-layer neighbourhood pixels in each direction. Then, inspired by centre symmetric LBP (CS-LBP), centre symmetric NWALBP (CS-NWALBP) is further proposed, which can effectively reduce computation complexity by only comparing the weighted average values of the neighbourhood pixels that are symmetric about the centre pixel. Finally, by combining the merit of histogram of oriented gradient (HOG), a feature fusion algorithm named CS-NWALBP+HOG is suggested. Several experiments have eventually demonstrated that our proposed algorithms have more robust performance under complex illumination conditions if compared with many other latest algorithms.*

Keywords: Face recognition, Histograms of gradients, Local binary pattern.

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