An Improved Face Recognition Algorithm Using Histogram-Based Features in Spatial and Frequency Domains

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Abstract : In this paper, we propose an improved face recognition algorithm using histogram-based features in spatial and frequency domains. For adding spatial information of the face to improve recognition performance, a region-division (RD) method is utilized. The facial area is firstly divided into several regions, then feature vectors of each facial part are generated by Binary Vector Quantization (BVQ) histogram using DCT coefficients in low frequency domains, as well as Local Binary Pattern (LBP) histogram in spatial domain. Recognition results with different regions are first obtained separately and then fused by weighted averaging. Publicly available ORL database is used for the evaluation of our proposed algorithm, which is consisted of 40 subjects with 10 images per subject containing variations in lighting, posing, and expressions. It is demonstrated that face recognition using RD method can achieve much higher recognition rate.