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A No-Reference Optical Flow-Based Quality Evaluator for Stereoscopic Videos in Curvelet Domain [☆]

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Abstract

Most of the existing 3D video quality assessment (3D-VQA/SVQA) methods only consider spatial information by directly using an image quality evaluation method. In addition, a few take the motion information of adjacent frames into consideration. In practice, one may assume that a single data-view is unlikely to be sufficient for effectively learning the video quality. Therefore, integration of multi-view information is both valuable and necessary. In this paper, we propose an effective multi-view feature learning metric for blind stereoscopic video quality assessment (BSVQA), which jointly focuses on spatial information, temporal information and inter-frame spatio-temporal information. In our study, a set of local binary patterns (LBP) statistical features extracted from a computed frame curvelet representation are used as spatial and spatio-temporal description, and the local flow statistical features based on the estimation of optical flow are used to describe the temporal distortion. Subsequently, a support vector regression (SVR) is utilized to map the feature vectors of each single view to subjective quality scores. Finally, the scores of multiple views are pooled into the final score

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