

Hybrid Temporal Correlation Based on Gaussian Mixture Model Framework for View Synthesis

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Abstract : As 3D video is explored as a hot research topic in the last few decades, free-viewpoint TV (FTV) is no doubt a promising field for its better visual experience and incomparable interactivity. View synthesis is obviously a crucial technology for FTV; it enables to render images in unlimited numbers of virtual viewpoints with the information from limited numbers of reference view. In this paper, a novel hybrid synthesis framework is proposed and blending priority is explored. In contrast to the commonly used View Synthesis Reference Software (VSRS), the presented synthesis process is driven in consideration of the temporal correlation of image sequences. The temporal correlations will be exploited to produce fine synthesis results even near the foreground boundaries. As for the blending priority, this scheme proposed that one of the two reference views is selected to be the main reference view based on the distance between the reference views and virtual view, another view is chosen as the auxiliary viewpoint, just assist to fill the hole pixel with the help of background information. Significant improvement of the proposed approach over the state-of-the-art pixel-based virtual view synthesis method is presented, the results of the experiments show that subjective gains can be observed, and objective PSNR average gains range from 0.5 to 1.3 dB, while SSIM average gains range from 0.01 to 0.05.

Keywords : fusion method, Gaussian mixture model, hybrid framework, view synthesis

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