view coded macroblocks. Such reduced complexity implementation is especially applicable to the low power mobile devices. Experimental results show that, comparing with cascaded algorithm, the proposed scheme, with much reduced complexity, only suffers moderate performance loss.

Edge and Motion-Adaptive Median Filtering for Multi-view Depth Map Enhancement

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Abstract: We present a novel multi-view depth map enhancement method deployed as a post-processing of initially estimated depth maps, which are incoherent in temporal and inter-view dimensions. The proposed method is based on edge and motion-adaptive median filtering and allows for improved quality of virtual view synthesis. To enforce the spatial, temporal and inter-view coherence in the multiview depth maps, the median filtering is applied to 4-dimensional windows that consist of the spatially neighbor depth map values taken at different viewpoints and time instants. These windows have locally adaptive shapes in presence of edges or motion to preserve sharpness and realistic rendering. We show that our enhancement method leads to a reduction of a coding bit-rate required for representation of the depth maps and also to a gain in the quality of synthesized views at an arbitrary virtual viewpoint. At the same time, the method carries a low additional computational complexity.

Hole-filling Method using Depth based In-painting for View Synthesis in Free Viewpoint Television (FTV) and 3D Video

Kwan-Jung Oh, Sehoon Yea, Yo-Sung Ho

Abstract: Depth image-based rendering (DIBR) is generally used to synthesize virtual view images in free viewpoint television (FTV) and three-dimensional (3-D) video. One of the main problems in DIBR is how to fill the holes caused by disocclusion regions and inaccurate depth values. In this paper, we propose a new hole filling method using a depth based in-painting technique. Experimental results show that the proposed hole filling method provides improved rendering quality both objectively and subjectively.

Multi-hypothesis Based Multi-view Distributed Video Coding

Yongpeng Li, Hongbin Liu, Xianming Liu, Siwei Ma, Debin Zhao, Wen Gao

Abstract: This paper proposes a multi-hypothesis based Wyner-Ziv (WZ) decoder for the multi-view distributed video coding (MDVC). Two hypotheses, the intra-view SI and the inter-view SI, are fed together into the WZ decoder in the proposed scheme. A multi-hypothesis based correlation model (MHBCM) is presented to fully exploit the redundancy between these two SI frames and the original frame. The MHBCM is also applied on the optimal minimum mean-square error reconstruction of the quantized samples. The simulation results show that the proposed algorithms are able to significantly improve the coding efficiency of the MDVC system.