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RESEARCH ARTICLE

Depth Video Compression Using Weighted Mode Filtering

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ABSTRACT: ***In this system, a technique has been proposed to compress a depth video by taking coding artifacts, spatial resolution, and dynamic range of the depth data into account. Due to abrupt signal changes on object boundaries, a depth video compressed by conventional video coding standards often introduces serious coding artifacts over object boundaries, which severely affect the quality of a synthesized view. The coding artifacts are suppressed by a post-processing, based on a weighted mode filtering and utilizing it as an in-loop filter. The weighted mode filtering method is attained by a joint histogram process. The weighted mode filtering is then applied to reconstruct a final solution with the original dynamic range by using the guided color information. This in addition, suppress the distortion from the dynamic range down/up scaling process by filtering the up scaling depth value based on the neighborhood information without degrading much the synthesized view quality. In addition, the proposed filter is also tailored to efficiently reconstruct the depth video from the reduced spatial resolution and the low dynamic range. The down/up sampling coding approaches for the spatial resolution and the dynamic range are used together with the proposed filter in order to further reduce the bit rate. The proposed techniques are verified by applying them to an efficient compression of multi-view-plus-depth data, which has emerged as an efficient data representation for 3-D video. Experimental results show that the proposed techniques significantly reduce the bit rate while achieving a better quality of the synthesized view in terms of both objective and subjective measures.***

Keywords: 3-D video, Depth coding, weighted mode Filtering, Depth dynamic range, Depth up/down sampling

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