Transmission of 3D Video over Network using Perceptual Video Coding

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Abstract

Scalable and reliable transmission of 3D video to end user through heterogeneous network is a challenging task. In this research the problem of scalable and reliable transmission of 3D video over network is addressed. In this project 3D video is encoded using H.264/SVC video and optimum truncation point of the scalable bitstream is selected according to the network conditions i.e. data rate, packet loss rate and network delay. Recently perceptual video coding got attention in which high coding gain is achieved by assigning different weights to the different portions of the video according to the user perception. In this paper scheme is presented in which left view and depth in stereoscopic is encoded in scalable manner using H.264/SVC. Then left view is encoded in perceptual manner using H.264/SVC. After encoding these scalable bitstreams are extracted at different rates and transmitted over network under lossy and lossless channel to see the effect of different parameters like bit error rate, packet loss rate and data rate drop. Simulation result shows that there is an average of 2 dB PSNR improvement in the decoded video using perceptual video coding. Perceptual 3D video coding scheme using H.264/SVC also shows better performance than the simple H.264/SVC encoding
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of 3D video under packet erasure channel and P2P network conditions.

References


Index Terms

Computer Science

Signal Processing

Keywords

Scalable video, perceptual coding, 3D video, Peer-to-Peer