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MULTIVIEW VIDEO SERVICE FRAMEWORK FOR 3-D MOBILE DEVICES

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Abstract. *In this paper, we propose a multi-view video service framework suitable for mobile environments. The proposed framework generates intermediate views in near real-time and overcomes the limitations of mobile services by adapting the multi-view video according to the processing capability of a mobile device as well as the user characteristics of a client. By implementing the most of adaptation processes at the server side, the load on a client can be reduced. H.264/AVC is adopted as a compression scheme. The framework could provide an interactive service with efficient video service to a mobile client. For this, we present a multi-view video DIA (Digital Item Adaptation) that adapts the multi-view video compatible to the MPEG-21 DIA multimedia framework. Experimental results show that our proposed system can support a frame rate of 13 fps for 320×240 video and reduce the time of generating an intermediate view by 80% compared with a conventional 3D projection method.*
Keywords: Multiview video, IVR, Mobile device, MPEG-21 DIA

1. **Introduction.** Recently, as digital broadcasting technologies have rapidly progressed, users' expectations for more realistic and interactive broadcasting services have also increased [1-3]. Three dimensional (3-D) television broadcasting is one of the promising technologies that could satisfy such expectations. 3-D video service includes stereoscopic TV, 3-D virtual studio, multi-view broadcasting and so forth. Among them, the multi-view broadcasting is attracting a lot of interest as one of the new types of broadcasting with the development of stereoscopic and multi-view displays [4-7]. The multiview video allows viewers to change their viewpoints without concern for the camera position.

The research on multiview video has been carried out at a variety of fields. RACE DISTIMA and ATTEST projects have established the fundamental concept of the multiview video systems, where the multiview videos are transmitted through separate channels [1]. Lou et al. proposed an interactive multiview video system under wired environments [4]. In this work, two views among the seventy cameras are transmitted to the client and intermediate views are not considered due to the processing time. Yang et al. proposed a multiview system that can be adapted to variable channel bandwidths [5]. Oh et al. developed a ten-view video and multichannel audio broadcasting system, where a pair of views is transmitted into a single channel [6]. The conventional works focused on server and high-end client devices over high-bandwidth networks [8]. On the contrary, works focusing on mobile environments are relative few.

Recently, two-view autostereoscopic mobile devices have been developed. Because viewers can easily adjust the viewing distance between the screen and their eyes, the autostereoscopic display is a proper choice. Following the trends of the multiview video as