Knowledge and Context-Based Strategies for 3D Video Content Adaptation Decison

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ABSTRACT

Nowadays, there exists a rich multimedia content scenario where the co-existence of different media types and formats is a reality. For instance, 3D content can be implemented through different coding approaches and is becoming more relevant due to the introduction of encoding architectures, such as the Multiview Video Coding (MVC), that encodes several different views of the scene and allows displays to generate the depth impression without the use of glasses. Furthermore, several transport/access networks, with different dynamic characteristics, can be used to deliver the content to the user, who, in turn, can consume it over a great diversity of client devices, each with its own capabilities. In this scenario, content adaptation deals with different resources constraints, while changes the multimedia content to meet the users expectation, delivering the best quality possible. There are several approaches to perform adaptation such as transcoding, selection, summarization, region of interest or transmoding, among others. This implies the need, when several adaptations are available, to define which adaptation or set of adaptations to execute over the content, this is, to take an adaptation decision. For 3D content, namely MVC, our approach defines states, based on variables that describe the content characteristics, that, in turn, are used together with the available adaptations to generate a map state, over which a Markov Decision Process is devised and solved to define the optimal policy of adaptation execution.