

RTE'13 - Real-Time multisensory virtual Experiments

High Visual Fidelity For Highly Immersive Virtual Environments

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Highly immersive virtual environment projects lead to the research of how we can achieve an acknowledgeable virtual environment in which a user's five senses are stimulated to achieve a high immersivity. Integrated on a multisensorial project, our work explores the visuals since it is still hard to be able to capture, store or deliver content that is capable of representing the dynamic range of the human eye with the conventional imaging technologies. High Dynamic Range (HDR) imaging has the goal of overcoming that issue and providing an enhanced viewing experience through significantly increased physical realism, colour gamut and contrast ratio.

Visuals is one of the most explored senses in computer graphics and HDR can be a big step forward in delivering a real-world experience in a computer generated simulation. For achieving a realistic reproduction of visuals, a set of studies must be undertaken aiming the delivery of HDR video on different displays as well as in different ambient luminance levels. As mobile or small screen devices (SSDs) are rapidly becoming the leading platform for the consumption of multimedia content, there is an urgent need to ensure an optimal experience when viewing HDR content on typical mobile device screens. Although the area and resolution of mobile devices have increased significantly in the last few years, the majority of mobile devices displays are still less powerful than conventional displays resulting in quality disparities when reproducing content on SSDs. Also, due to the unique characteristics of mobile devices, the variety of viewing conditions where they are used, and the fact that they are becoming so widespread, it is important to identify what is the best method to deliver HDR video content to these devices.