

High Dynamic Range video: perspectives and challenges

Producing truly realistic video is widely seen as the holy grail towards further improving Quality of Experience (QoE) for end users of multimedia services. Currently investigated directions include high spatial resolutions, high frame rates, wide color gamut and high dynamic range.

The human visual system is able to perceive a wide range of colors and luminous intensities, as present in outdoor scenes in everyday real life, ranging from bright sunshine to dark shadows. However, current traditional imaging technologies cannot capture nor reproduce such a broad range of luminance. The objective of HDR imaging is to overcome these limitations, hence leading to more realistic videos and a greatly enhanced user experience.

HDR applied to still images has been an active field of research and development for many years, especially for photography. However, its extension to video content has only been considered recently. The effective deployment of HDR video technologies involves redefining common interfaces for end-to-end content delivery, which in turn, entails many technical and scientific challenges.

In this talk, I will discuss recent research activities covering several aspects of an HDR video system, in particular video coding, visual quality assessment, and video analysis. I will also present potential applications beyond entertainment, including for the automotive industry, medical imaging, or imaging of spacecraft.