CIE TC 8-18

Title

- CIE TC 8-18: Guidelines for Definition and Evaluation of High Dynamic Range Images and Image Sequences
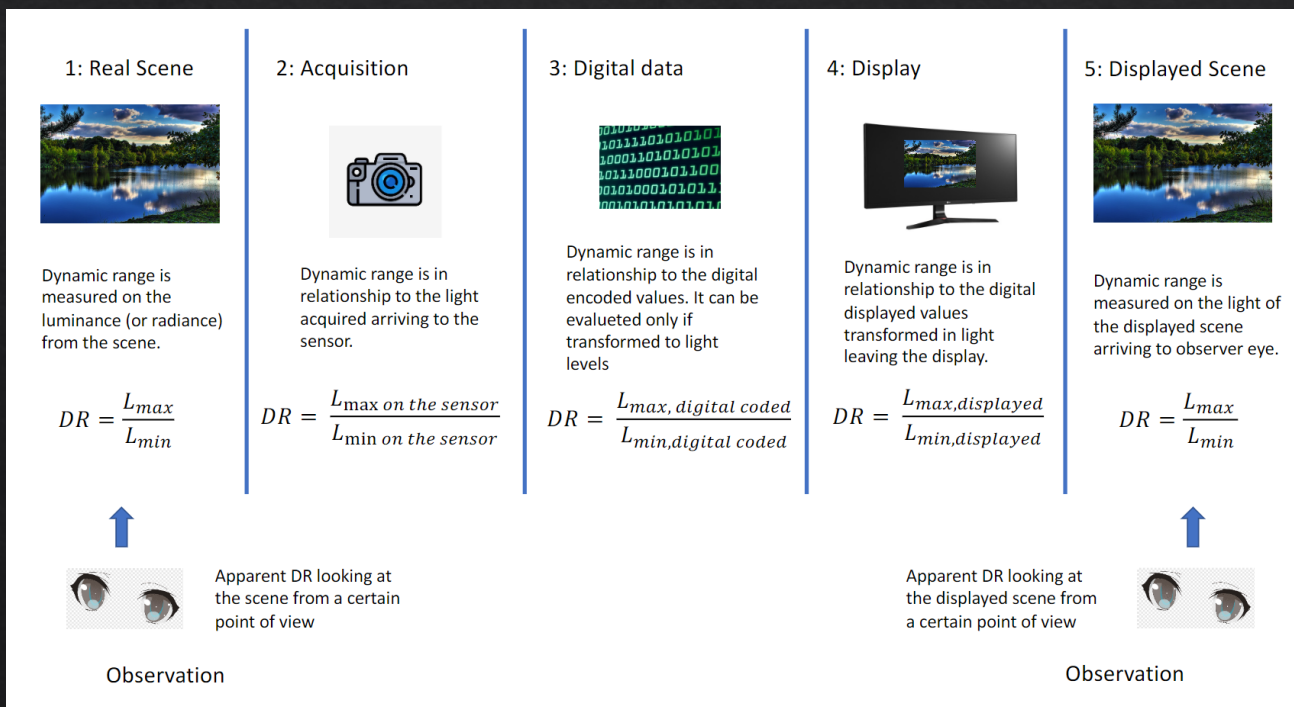
Terms of Reference

- To propose a definition of High Dynamic Range (HDR) images and image sequences (Images, hereafter), including luminance level, contrast, and spatial/temporal distribution. To define luminance levels, observing environment, adopted white point, the kinds of Images to be used in research experiments and their assessment. To recommend methods of calculating key characteristics of the HDR Images.

Scope

- This TC provides guidelines on experimental settings for visual evaluation of HDR images and image sequences. Also, it recommends calculation methods of key parameters to be used for further study.
- This TC does not provide a new colour appearance model or measurement methods for HDR images and image sequences.

CIE TC 8-18: Tasks

Defining what we mean by HDR	Defining HDR image and image sequence formats and attributes	HDR image and image sequence quality
• Physical scene • Digitally • Perceptually	• Peak luminance • White points • Contrast – spatial and temporal • Dark levels	• Stimuli • Reference / Ground truth • Experimental Methodology • Measurement • Data analysis • Reporting

Working towards general definitions and guidelines to help clarify common confusion and misconceptions in the field.

The main tasks are organized according to HDR imaging pipeline

1: Real Scene

Dynamic range is measured on the luminance (or radiance) from the scene.

$$DR = \frac{L_{max}}{L_{min}}$$

Apparent DR looking at the scene from a certain point of view

Observation

2: Acquisition

Dynamic range is in relationship to the light acquired arriving to the sensor.

$$DR = \frac{L_{\text{max on the sensor}}}{L_{\text{min on the sensor}}}$$

3: Digital data

Dynamic range is in relationship to the digital encoded values. It can be evalueted only if transformed to light levels

$$DR = \frac{L_{max, digital\ coded}}{L_{min, digital\ coded}}$$

4: Display

Dynamic range is in relationship to the digital displayed values transformed in light leaving the display.

$$DR = \frac{L_{max, displayed}}{L_{min, displayed}}$$

5: Displayed Scene

Dynamic range is measured on the light of the displayed scene arriving to observer eye.

$$DR = \frac{L_{max}}{L_{min}}$$

Apparent DR looking at the displayed scene from a certain point of view

Observation

Quality Evaluation intents:

❖ Accuracy/ DR or luminance reproduction
❖ Observation/perceptual appearance
❖ Pleasantness

CIE TC 8-18

- ◈ 20 TCMs
  - ◈ From more than 8 countries
  - ◈ Experts from Industry and academia
- ◈ TCC – Mekides Assefa Abebe
- ◈ Liaison with ISO TC 42
- ◈ Working closely with other related CIE TCs
- ◈ 6 meetings are conducted so far
  - ◈ Important document list is prepared
  - ◈ Important terms and definitions are being generated