

High Dynamic Range Images

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Today's exercise is focused on implementation of high dynamic range (HDR) images.

We need a sequence of images:

$$I_1 \dots I_n,$$

where n is number of images.

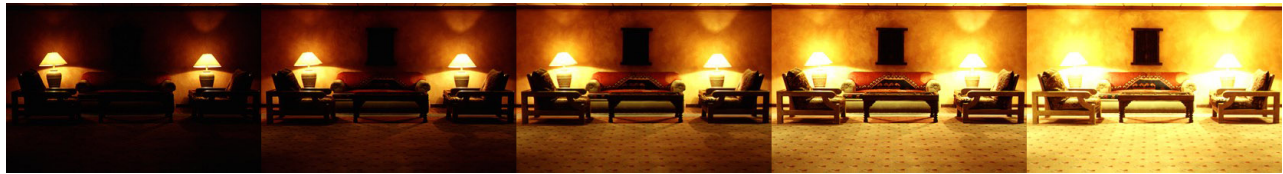


Figure 1: Sequence of five images in different exposure.

For each pixel at coordinate (i, j) and image k , we compute a weight:

$$w_k(i, j) = \exp\left(-\frac{(I_k(i, j) - 255\mu)^2}{2(255\sigma)^2}\right),$$

where $\mu = 0.5$, and $\sigma = 0.2$ (you can elaborate on these constants).

Weights have to be normalized to the sum of values for every pixel (sum of $w_k = 1$).

The final radiance in each pixel can be computed as a sum of weighted pixel colors over set of images:

$$R(i, j) = \sum_{k=1}^n w_k(i, j) I_k(i, j).$$

Images can be processed in grayscale
or in all three color channels.



Figure 2: Grayscale HDR output.



Figure 3: Color HDR output.