

Week2

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I believe the challenge of transferring light from physical world to screen is that in real life, amplitude of the light wave is unbounded, but we have only 255 different colors in RGB on screen, which can only gives us 255 shades of gray. (I assume we do not considering mixing colors with certain algorithms to create the illusion of gray scale).

The first approach comes to my mind is rather simple. We manually set an upper bound radiant energy x as the highest intensity of the light we can represent on screen. Then we map 0 to 255 on screen intensity to 0 to x physical radiant energy.

Then I start to think how to determine x . We can simply measure the radiant energy(or simply take photos?) of the screen in a dark room when it is at 255 all RGB channels at viewing distance. In this case we can guarantee our monitor and physical light are “identical” at that point.

I couldn't really think of a third way to improve this transition. In case the rising of intensity with the RGB channels is not linear, we can have more checkpoints in between 0 to 255 to make the light more accurate. In addition, it's important to measure 0 as well, since neither LED or LCD monitors can actually present pure black.