

# Development of High Dynamic Range Algorithms

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Color imaging systems are continuously improving, and have now improved to the point of capturing high dynamic range (HDR) scenes. High dynamic range refers to the physical luminance range of the scene, and can exceed six orders of magnitude for real world situations. Unfortunately most commercially available color display devices, such as CRTs and LCDs, are limited in their dynamic range, often capable of displaying only two orders of magnitude. It is necessary to tone-map, or render, the high dynamic range images in order to display them onto a lower dynamic range device. This talk will discuss methods for capturing, generating, processing, and ultimately displaying HDR images. One algorithm developed at RIT, iCAM, will be discussed in detail. Ongoing efforts to test the fidelity of existing tone-mapping operators will also be discussed.

Garrett M. Johnson is a Research Assistant Professor with the Munsell Color Science Lab, in the Center for Imaging Science at RIT. He obtained a Ph.D. in Imaging Science, and M.S. in Color Science both from RIT. His research is focused on models of color and image appearance, computer graphics, high dynamic range rendering, and image quality. He is currently chair of CIE TC8-08, a technical committee tasked with developing methods and techniques for testing spatial appearance models for high dynamic range imaging.