The medium and the message: a contrarian view of image quality
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Abstract:

In his influential 1964 book "Understanding Media" social theorist Marshall McLuhan declared: "The medium is the message." The premise of this talk is that with respect to image quality, imaging system developers have taken McLuhan's dictum too much to heart. Development efforts typically focus on improving the technical properties of imaging media (dynamic range, color gamut, spatial resolution, temporal response, etc.) with little regard for the visual messages the images are meant to convey. In this talk I will describe a series of psychophysical studies that investigate the visual system's ability to "see through" the limitations of imaging media to perceive the messages (object and scene properties) that the images represent. The goal of this work is to understand the relationships between the signal characteristics of images and the fidelity of images as visual representations. The results provide a new perspective on image quality that shows that images that are very different in quality according to current metrics, can be visually equivalent as realistic representations of objects and scenes, and provides a foundation for new image quality metrics that better reflect the dual nature of images as signals and as representations.

Bio:

James A. Ferwerda is an Associate Professor in the Chester F. Carlson Center for Imaging Science at the Rochester Institute of Technology. He received a B.A. in Psychology, M.S. in Computer Graphics, and a Ph.D. in Experimental Psychology, all from Cornell University. The focus of his research is on building computational models of human vision from psychophysical experiments, and developing advanced imaging systems based on these models. He is an Associate Editor of ACM Transactions on Applied Perception, and serves on the Program Committee of the IS&T Human Vision and Electronic Imaging Conference. In 2003 he was selected by the National Academy of Engineering for the Frontiers of Engineering Program and in 2010 for the NAE Keck Futures program. In 2013 he was awarded the Xerox Chair in Imaging Science at RIT.