

What makes a good picture? Reflections on image quality research

Geoff Woolfe, Canon Information Systems Research Australia Pty. Ltd. (Australia)

Abstract

Image quality is a complex and multi-disciplinary field of research. Its applications cover a broad gamut including image engineering, photography, display technology and printing. Image quality is frequently an important consideration in optimizing technologies such as imaging device design, image compression, image encoding, colour management and broadcast transmission. In display and printing image quality plays an important role in design factors such as colour gamut, tone scale, resolution and spatial uniformity.

The paper begins by reviewing the development of image quality concepts from simple engineering measures of fidelity, through attempts to improve these measures by accounting for low level features of the human visual system.

In the case of photographic capture and rendering, the issue of fidelity of the image to the original scene is discussed, taking account of the consequences of colour appearance phenomena and colour preference.

Finally, the relationship between image quality and higher order cognitive factors including naturalness, composition and region of salience are examined.