Natural image statistics for computer graphics

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UUCS-01-002

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March 26, 2001

Abstract

The class of all natural images is an infinitely small fraction of all possible images. The structure of natural images can be statistically modeled, revealing striking regularities. The human visual system appears to be optimized to view natural images, as opposed to any possible image, and therefore expects to interpret images which conform to these statistics. Research has shown that images that do not statistically behave as natural images are harder for the human visual system to interpret. This paper reviews the statistics of natural images and the implications for computer graphics in general are assessed. We argue that these statistics are important for graphics applications and finally, we provide a direct application of these findings to random subdivision terrain modeling.