

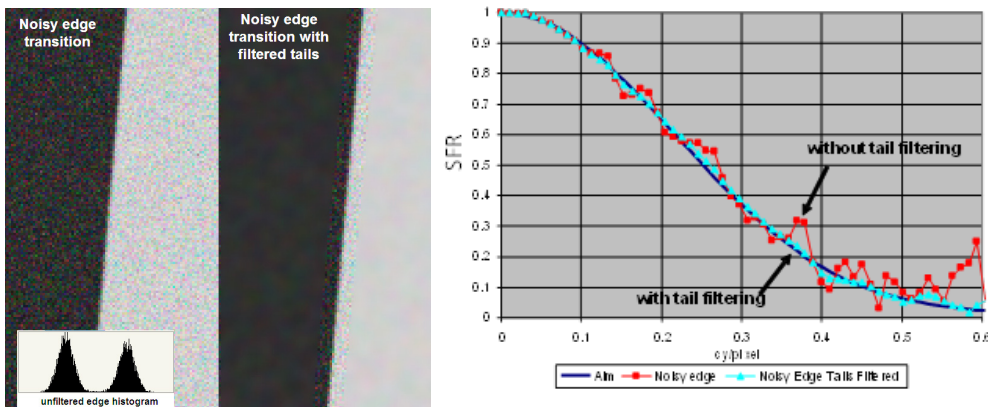
Evolution of Slanted Edge Gradient SFR Measurement

Don Williams^a and Peter D. Burns^b

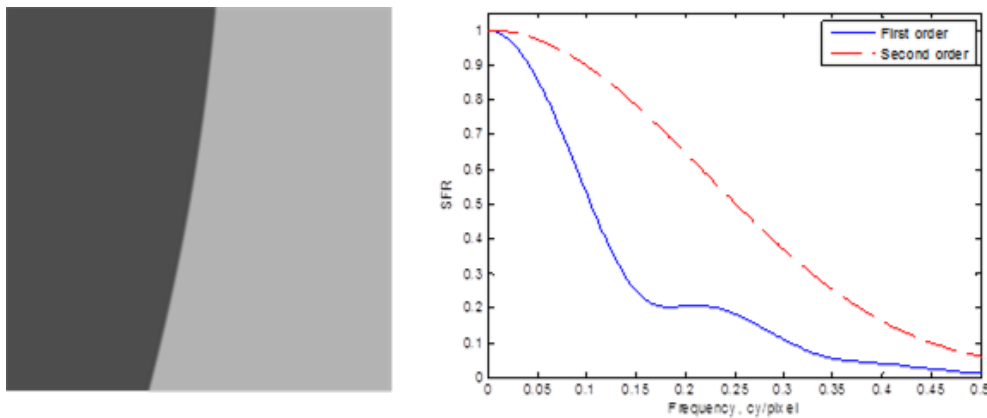
^aImage Science Associates, Williamson, NY USA

^bBurns Digital Imaging, Fairport, NY USA

The well-established Modulation Transfer Function (MTF) is an imaging performance parameter that is well suited to describing certain sources of detail loss, such as optical focus and motion blur. As performance standards have developed for digital imaging systems, the MTF concept has been adapted and applied as the spatial frequency response (SFR). The international standard for measuring digital camera resolution, ISO 12233, was adopted over a decade ago. Since then the slanted edge-gradient analysis method on which it was based has been improved and applied beyond digital camera evaluation. Practitioners have modified minor elements of the standard method to suit specific system characteristics, unique measurement needs, or computational shortcomings in the original method. Some of these adaptations have been documented and benchmarked, but a number have not. In this paper we describe several of these modifications, and how they have improved the reliability of the resulting system evaluations. We also review several ways the method has been adapted and applied beyond camera resolution.



Example of spatial filtering image ROI data near an edge feature (upper) regions with and without filtering (contrast is increased for display here, (lower) corresponding SFR results for the luminance record



Edge with spatial distortion and computed SFR with linear and quadratic fit to the edge