

# **CCD Camera Transfer Function Measurement and Its Implication for Sampling and Operator Performance**

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## **ABSTRACT**

A method for measuring the two dimensional modulation transfer function of an image acquisition system is presented. A minimum of laboratory apparatus is required. The band limiting of spatial frequencies by the system are considered with respect to signal aliasing, feature representation and edge detection.

Various edge detectors are tested and compared using high resolution data computed during the transfer function measurements. This data was from realistically smoothed edges and represents the most difficult edges that realistically smoothed edges and represents the most difficult edges that the practical system would need to detect. Significant differences were found between results using the traditional pixel average and the new step edge models, indicating that in some cases a simpler, more computationally efficient operator may be sufficient.

**Key Terms: Transfer function, CCD Camera, Image sampling, Edge detector accuracy.**

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