Projector Nonlinear Gamma Effect Reduction for Fringe Projection

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Abstract

For acquiring three dimensional shape information of objects, fringe projection profilometry is one of the most commonly used noncontact methods. One of the benefit of digital fringe projection profilometry is that utilizes a digital video projector as a structured light source, brings flexibility. However, the gamma nonlinearity of the video projector affects the accuracy of three dimensional topography measurements. In this paper, we present an accurate gamma correction technique based on a Fourier spectrum analysis. The presented method is validated by a simulations and experiments.

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