

Measuring Profilometry System Optimization

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Abstract

In this paper, we present an experimental procedure that involves a collection of mathematical and statistical techniques to optimize the performance of a structured light shape reconstruction system. Four factors were studied: the distance between the centers of camera's lens and projector's lens, the normal distant between reference plane and the camera, fringe patterns period on the reference plane and the angle of the projector with respect to the surface where it is placed. The response variable analyzed was the difference between the reconstructed dimensions and the reference objet dimension, we used the cross-section and calculate the root mean square error. The aim was to determine the factors levels arrangement that improve the performance of the phase measuring profilometry system.