

3D shape measurement and reconstruction using fringe projection

Abstract

Digital fringe projection technique using phase shifting method has been studied extensively for generating three dimensional (3D) surface information. The aim of this paper is to develop a simple automated optical inspection (AOI) system using fringe projection technique to capture image of an object. A three step phase shifting is used to generate the saw tooth image to retrieve the information of the pixel coordinate and surface dimension. The calibration of the camera and projector is observed to contribute a great significant on the measurement accuracy. The developed system is capable to measure the object surface dimension and perform the 3D reconstruction with high speed and good precision.

Keywords; Automatic Optical Inspection, Fringe Projection Technique, Three Dimensional Measurement, Three Step Phase Shifting