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Title:

Three-Dimensional Image Reconstruction for Automated Defect Detection at Artificial Metallic Surface Specimens

Authors:

Maskuri N.L.,
Abu Bakar M.H.,
Ismail A.K.

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Abstract:

Non-destructive testing (NDT) is a testing and analysing method that is used nowadays for evaluation properties, material, system, or structure for differences characteristic of surface defects without causing any damages on the analysed parts. The flaws on product surfaces caused by some fault in the production lane will downgrade the product quality. The metallic surface defect is now becoming a trend in the world of research and development. That is because the human resource workforce is still applied nowadays to verify the anomalies and may lead to some human error. This paper is focusing on three-dimensional (3-D) image reconstruction for automated defect detection on artificial metallic surface specimens. The development of an algorithm is to reconstruct the model by using visual-based aid. The 3-D images were reconstructed from several infrared image thermograms captured during the experimental and analysis session by a specific developed algorithm. For better result analysis, the sample was drawn in a 2-D CAD program and then they have been analysed. The major finding from the implication and this significant study is increasing the quality of the product, decreasing the consumed time, human limitation, and error. The technology of this visual-based 3-D reconstruction system can overcome the current expensive method in production lanes. This system application will cover a fast quality checking process on a metallic component surface compared to conventional manual inspection. It can be concluded that the 3-D image reconstruction will fasten the automated quality checking process with better defect classification.