

ON LINE AUTOMATED SURFACE ROUGHNESS INSPECTION FOR INTELLIGENT MANUFACTURING BY MACHINE VISION USING NEURO FUZZY NETWORKS

U. NATARAJAN AND S. PALANI

Abstract

With the increasing demand of high quality components in the present day's competitive world, a well built machine vision system would definitely suffice the needs of the automated manufacturing industries. Now a days machine vision plays a vital role in almost all industries especially in manufacturing units. It is a method of inspecting and identifying parts, accurately measuring dimensions and other parameters by non-contact means. The vision systems are getting encouragement in general manufacturing automation due to their continuous improvements in cost, performance, algorithmic robustness and ease of use. With this idea in mind, a sincere attempt is to be made to analyze the feasibility of fully automated futuristic factories. This research proposal deals with the use of machine vision techniques to inspect surface roughness of a work piece under a variation of turning operations has been reported. The surface image of the work piece is first acquired using a digital camera and then the feature of the surface image is extracted. A neural fuzzy network using a self organizing adaptive modeling method is applied to constructing the relationships between the feature of the surface Image and actual surface roughness under various parameters of turning operations. As a result, the surface roughness of the turned part can be predicted with reasonable accuracy if the gray level of the

Key Words : *Machine vision; Non-contact inspection; Surface roughness; neural fuzzy Network.*