

Automation Tool Wear System Based on Validated Corner Detection and
Taguchi's Method

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Abstract

This paper applied machine vision technique and Grey-Taguchi method to optimize the micro-drilling of PMMA (Polymethyl methacrylate) polymer with multiple performance characteristics. In this paper, an effective corner detection algorithm based on subpixel edge detector and Gaussian filter is presented. In addition, the orthogonal array, grey relational analysis, and analysis of variance were used to study the performance indices. The experimental results show that the proposed algorithm is an effective method and TiAlN-coating drills generate least wear and best holes quality. Finally, confirmation experiments were conducted to confirm the validity of the results.

Keyword : Machine Vision, Taguchi Method, Micro-drilling, PMMA Polymer, Subpixel Corner Detection