Vision-Based Automatic Tool Wear Monitoring System

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Abstract

The vision-based of automated tool wear monitoring systems are very important and efficient for unmanned machining systems. This research is use the machine vision inspection technique to automatic tool wear monitoring measurement of different coated drills. The tool wear images are captured using a machine vision system incorporating with an effective extract vertex algorithm based on subpixel edge detector and Gaussian filter is presented. Finally, Statically Process Control (SPC) technique is applied to detect vertices. The results show that the proposed algorithm is an effective method for the different coated drilling factor is recognized to make the most significant contribution to the over all performance. The TiAlN coated drilling has the least wear rate amongst these coated drilling cutters and has the longest tool life in this experiment

Keyword：Tool Wear Monitoring, Machine Vision System, Subpixel Edge, Extract Vertex, SPC.