

Retraction Free Motion Approach and Its Application in Automated Robotic Edge Finishing and Inspection Processes

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Abstract : In this paper, a motion generation algorithm for a six Degrees of Freedom (DoF) robotic hand in a static environment is presented. The purpose of developing this method is to be used in the path generation of the end-effector for edge finishing and inspection processes by utilizing the CAD model of the considered workpiece. Nonetheless, the proposed algorithm may be extended to be applicable for other similar manufacturing processes. A software package programmed in the application programming interface (API) of SolidWorks generates tool path data for the robot. The proposed method significantly simplifies the given problem, resulting in a reduction in the CPU time needed to generate the path, and offers an efficient overall solution. The ABB IRB2000 robot is chosen for executing the generated tool path.

Keywords : CAD-based tools, edge deburring, edge scanning, offline programming, path generation

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