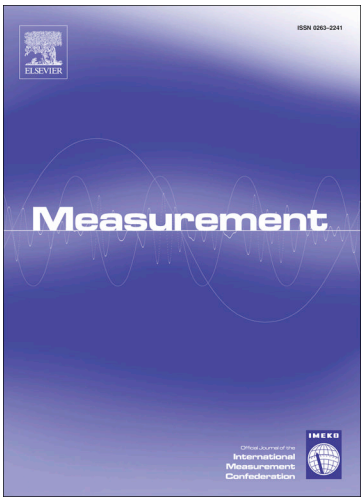

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A Tangential Approximation Algorithm for Measured Data Reduction of Blade Section Curves

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Keywords: Blade section curves; Feature points; Polygonal approximation; Error distribution

Abstract: In order to reduce the measurement time of blade in the machining process, a data reduction algorithm is proposed in this paper. The proposed algorithm first selects a set of starting points on section curves. And then change-points are found according to its tangent properties for different segments divided by the starting points. In each segment redivided by the change-points, a redefined criterion uses a variable distance between the approximating line and section curve as objective function to ensure the proposed algorithm reserves more points where the curvature of the curve is large. This makes the achieved polygon accurately retains both the shape and details of section curves. When compared with other polygonal approximation algorithms, the proposed algorithm gives consideration to both computation time and compression rate, obtains a better approximation error distribution. Experimental results show that the proposed algorithm is stable and useful in actual machining process.