

Local Convexity Preserving Rational Cubic Spline Curves

Sarfraz, M. Hussain, M. Habib, Z.; Dept. of Inf. Comput. Sci., King Fahd Univ. of
Pet. Miner., Dhahran;

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King Fahd University of Petroleum & Minerals

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Summary

A scheme for generating plane curves which interpolates given data is described. A curve is obtained by patching together rational cubics and straight-line segments which, in general, is C^1 continuous. It is a local scheme which controls the shape of the curve and preserves the shape of the data by being local convexity-preserving. A particular scheme is suggested which selects the tangent vectors required at each interpolation point for generating a curve. An algorithm is presented which constructs a curve by interpolating the given data points. This scheme provides a visually pleasant display of the curve's presentation. An extra feature of this curve scheme is that it allows subsequent interactive alteration of the shape of the default curve by changing the shape control parameters and the shape-preserving parameters associated with each curve segment. Thus, this feature is useful for further enhancing the user satisfaction, if desired

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