

图形、图像、模式识别

B样条乘积计算的区间跳跃算法及应用

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摘要 利用B样条基函数节点区间的对应关系, 首先给出了B样条基函数间的转换矩阵的计算方法, 进而给出了计算B样条乘积的区间跳跃算法。该算法仅需计算部分节点区间上的转换矩阵, 因此称其为区间跳跃算法。这一方法解决了分段多项式与B样条曲线乘积的计算问题, 可应用到B样条曲线的升阶、曲面间光滑拼接等问题中。通过算例验证了该方法计算简捷、易于实现。

关键词 [B样条乘积](#) [转换矩阵](#) [区间跳跃算法](#)

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Knot interval skipping method for multiplication of B-spline functions and the application

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Abstract

By utilizing the relationship between the knot intervals, a method for calculating the transform matrix between different B-spline basis functions is presented. Furthermore, an interval skipping algorithm is given to calculate B-spline functions multiplication. This algorithm is so-called just as only part of knot intervals need to be considered to calculate rapidly B-spline functions multiplication. This algorithm partially solves the multiplication of piecewise polynomial and B-spline curve; and it can be applied into smooth B-spline surfaces blending and elevation of B-spline. Some examples are given to illustrate the efficiency of the presented algorithm.

Key words [B-spline multiplication](#) [transform matrix](#) [interval skipping method](#)

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