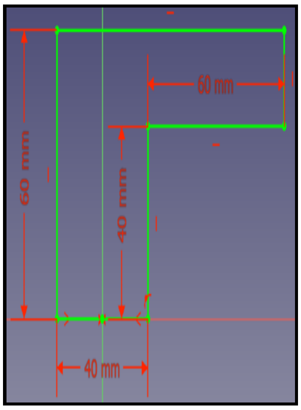
Geometric control of rational cubic B-splines

University of Birmingham - 1.4.3 Algorithms for B



Description: -
-Geometric control of rational cubic B-splines
-Geometric control of rational cubic B-splines
Notes: Thesis (Ph.D) - University of Birmingham, School of Manufacturing and Mechanical Engineering, Faculty of Engineering.
This edition was published in 1998

Filesize: 40.109 MB

Tags: #B

Offsets of curves on rational B

If the interior knots are all distinct, then the B-spline curve has M-k non-vanishing spans i. Cubic splines are interpolating curves. Slide 1 : Spline Spline : Continuity Here's the Trick! Geometric modeling Design Process Geometric modeling Stress Analysis Engineering Analysis Thermal Analysis After-life Analysis Visualization Production planning Engineering drawing CNC programming Geometric modeling is a basic engineering tool.

Geometric model & curve

Representing a parametric curve in the vector-valued form allows a uniform treatment of two-, three-, or n-dimensional space, and provides a simple yet highly expressive notation for n-dimensional problems.

1.4.3 Algorithms for B

Does anyone figure out what I did wrong? The -th span of the cubic B-spline curve in Fig. Decreasing h i pushes the curve farther from point. The subdivision property completes the definition of the spacing of the control points.

Rational geometric splines

We have already learnt all about the the B-spline bit of NURBS and about the non-uniform bit. By satisfying the constraints set by the knots and continuity conditions C0, C1, continuity at the extremities Slide 13 : An Illustrative Example An Illustrative Example Cubic Hermite Splines: Slide 14 : The Gradient of a Cubic Spline The Gradient of a Cubic Spline Slide 15 : The Hermite Specification as a Matrix Equation The Hermite Specification as a Matrix Equation Slide 16 : Solve for the Hermite Coefficients Solve for the Hermite Coefficients Slide 17 : The Hermite Specification as a Matrix Equation The Hermite Specification as a Matrix Equation Slide 18 : Spline Basis and Geometry Matrices Spline Basis and Geometry Matrices Slide 19 : Resulting Cubic Hermite Spline Equation Resulting Cubic Hermite Spline Equation Slide 20 : Another Way to Think About Splines Another Way to Think About Splines The contribution of each geometric factor can be considered separately, this approach gives a so-called blending function associated with each factor. .

Geometric model & curve

They represent vertices of objects.

Fine Tuning of Rational B

However, if any of the control points are moved after knot insertion, the continuity at the knot will become , where is the multiplicity of the knot. Both CAD and CAM are extensively used in a large number of areas, including aerospace, automotive engineering, marine engineering, civil engineering, and electronic engineering. Control Points a set of points that influence the curve's shape Knots control points that lie on the curve Interpolating spline curve passes through the control points knots Approximating spline control points merely influence shape Convex Hull convex polygon boundary that encloses a set of control points If some data points are used to construct a curve the curve can either pass through the points, in which case the curve is interpolating, or the points can just be used to control the general shape of the curve and the curve doesn't actually pass through the points, in which case the curve is approximating.

1.4.2 B

P4 P1 P3 u P2 v P 0,v P 0,v P u,1 P 1,v P u,0 Parametric definition By varying value of u and v, any point on the surface or the edge of the face may be defined. B-Spline Surfaces Apply B-Spline machinery in two different directions. An interesting exercise is to place a cubic Bezier curve's end points at 0,1 and 1,0 , with the other control points at and.

Spline Lecture #1

These functions enable the creation and management of complex shapes and surfaces using a number of points. A more general but also more complex insertion algorithm permitting insertion of several possibly multiple knots into a B-spline knot vector, known as the Oslo algorithm, was developed by Cohen et al. Furthermore, the tangent direction of the curve at d 0 is from d 0 to d 1 and the tangent direction at d M-1 is from d M-2 to d M-1.

Related Books

- Stampa nel Cinquecento. - Breve prospetto.
- Personnel evaluation in vocational and technical education.
- Arabs and Jews deny Palestuine gun-running.
- United States and the politicization of the World Bank - issues of international law and policy
- Han'guk nosa kwan'gye ŭi hyŏnjuso wa mirae