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# Monotonic Cubic Spline Interpolation Univie

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(PDF) Monotonic cubic spline interpolation

Monotonic interpolating splines #105. Open  
svillemot opened this ... (1980) Monotone piecewise  
cubic interpolation, SIAM Journal on Numerical  
Analysis 17, 238--246. Hyman, J. M. (1983) Accurate  
monotonicity preserving cubic interpolation. ...  
Some months ago I needed fast monotone cubic  
splines for a webapp and decided to look up the  
original ...

Monotonic Cubic Spline Interpolation Univie

`scipy.interpolate.PchipInterpolator¶` class  
`scipy.interpolate.PchipInterpolator(x, y, axis=0,`

`extrapolate=None)` [source] ¶. PCHIP 1-d monotonic cubic  
interpolation. x and y are arrays of values used to approximate  
some function f, with  $y = f(x)$ . The interpolant uses monotonic  
cubic splines to find the value of new points.

**Spline interpolation - Wikipedia**

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Cubic Hermite spline - Wikipedia

Monotonic cubic spline interpolation Abstract: This paper  
describes the use of cubic splines for interpolating  
monotonic data sets. Interpolating cubic splines are  
popular for fitting data because they use low-order  
polynomials and have  $C^2$  continuity, a property that  
permits them to satisfy a desirable smoothness constraint.

3.3 Cubic Spline Interpolation - homepage.univie.ac.at

The sample JavaScript implementation is a useful resource for monotone  
cubic interpolation, and it is appropriate to include it in this article, but it  
does not implement the Fritsch-Carlson method as claimed: "The  
following JavaScript implementation takes a data set and produces a  
Fritsch-Carlson cubic spline interpolant function".

Monotone cubic interpolation - Wikipedia

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Compare the interpolation results produced by `spline`, `pchip`, and `makima` for two different data sets. These functions all perform different forms of piecewise cubic Hermite interpolation. Each function differs in how it computes the slopes of the interpolant, leading to different behaviors when the underlying data has flat areas or undulations.

#### [python - SciPy Monotone Cubic Spline Interpolation - Stack ...](#)

I am drawing some graphs in PyQt and I need to use monotone cubic spline interpolation to get nice smooth lines (that don't extend their boundaries). SciPi has a `CubicSpline` object which I was able to get working, however it is not "monotonic". Is there an easy way to achieve this? Regretfully my knowledge of math is basic and I really don't know much calculus so reading the documentation has ...

#### [3.3 Cubic Spline Interpolation - univie.ac.at](#)

Thanks for contributing an answer to Code Review Stack Exchange! Please be sure to answer the question. Provide details and share your research! But avoid .... Asking for help, clarification, or responding to other answers.

#### [Cubic spline data interpolation - MATLAB spline](#)

Monotone interpolation can be accomplished using cubic Hermite spline with the tangents modified to ensure the monotonicity of the resulting Hermite spline.. An algorithm is also available for monotone quintic Hermite interpolation.. Interpolant selection. There are several ways of selecting interpolating tangents for each data point.

#### [Monotone cubic interpolation - Wikipedia](#)

I'm in need to implement Monotone Cubic Interpolation for interpolate a sequence of points. The information I have about the points are x,y and timestamp. I'm much more an IT guy rather than a mathematical person, so I'm looking for an example of implementation.

#### [geometry - Implementation of Monotone Cubic Interpolation ...](#)

Monotone cubic interpolation Main article: Monotone cubic interpolation If a cubic Hermite spline of any of the above listed types is used for interpolation of a monotonic data set, the interpolated function will not necessarily be monotonic, but monotonicity can be preserved by adjusting the tangents.

#### [Monotonic cubic spline interpolation - IEEE Conference ...](#)

Monotonic Cubic Spline Interpolation George Wolberg Itzik Alf Department of Computer Science City College of New York / CUNY New York, NY 10031 wolberg@cs-mail.engr.ccny.cuny.edu Abstract This paper describes the use of cubic splines for interpolating monotonic data sets. Interpolating cubic splines are

#### [Monotone Piecewise Cubic Interpolation in SQL Server](#)

There is a large body of work in the field of monotonic cubic spline interpolation. The earliest work in this area can be traced back to that of Chebyshev [3,2].

cubic spline, which has zero second derivative on one or both of its boundaries, or • set either of  $y_1$  and  $y_N$  to values calculated from equation (3.3.5) so as to make the first derivative of the interpolating function have a specified value on either or both boundaries. One reason that cubic splines are especially practical is that the set ...

#### [Monotonic interpolating splines - Issue #105 - JuliaMath ...](#)

Monotone interpolation can be accomplished using cubic Hermite spline with the tangents modified to ensure the monotonicity of the resulting Hermite spline.. An algorithm is also available for monotone quintic Hermite interpolation.. Interpolant selection. There are several ways of selecting interpolating tangents for each data point.

#### [Monotone Piecewise Cubic Interpolation | SIAM Journal on ...](#)

The goal of cubic spline interpolation is to get an interpolation formula that is smooth in the first derivative, and continuous in the second derivative, both within an interval and at its boundaries. Suppose, contrary to fact, that in addition to the tabulated values of  $y_i$ , we

#### [Talk:Monotone cubic interpolation - Wikipedia](#)

(2002) An energy-minimization framework for monotonic cubic spline interpolation. Journal of Computational and Applied Mathematics 143 :2, 145-188. (2002) Hermite collocation solution of near-singular problems using numerical coordinate transformations

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based on adaptivity.

scipy.interpolate.PchipInterpolator — SciPy v0.14.0 ...

ACCURATE MONOTONE CUBIC INTERPOLATION Hung T.

Huynh National Aeronautics and Space Administration Lewis

Research Center Cleveland, Ohio 44135 Abstract. Monotone

piecewise cubic interpolants are simple and effective. They are

generally third-order accurate, except near strict local extrema where accuracy de-

Monotonic Cubic Spline Interpolation - univie.ac.at

Introduction. Originally, spline was a term for elastic rulers that were bent to pass through a number of predefined points ("knots"). These were used to make technical drawings for shipbuilding and construction by hand, as illustrated by Figure 1.

Monotone cubic interpolation - Code Review Stack Exchange

Now, let 's look at monotonic cubic spline interpolation. This type of interpolation constructs a monotone piecewise interpolant to monotone data. In other words, it considers the shape of the data but then modifies the interpolants to eliminate the oscillations (or bumps and wiggles as they are referred to by Fritsch and Carlson). ...