

A 2D nonlinear algorithm for monotone piecewise bicubic interpolation

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In this talk we present an algorithm for monotonic interpolation to monotone data on a rectangular mesh by piecewise bicubic functions. Carlton and Fritsch develop conditions on the Hermite derivatives that are sufficient for such a function to be monotonic. Here we obtain nonlinear approximations to the first partial and first mixed partial derivatives at the mesh points. We prove that we get a monotone piecewise bicubic interpolant and analyze the order of this nonlinear interpolant. We also present some numerical experiments where we compare the results we obtain our algorithm with the obtained using linear techniques.

References

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