

Interpolation of Data in \mathbb{R}^3 using Quartic Triangular Bézier Surfaces

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Abstract: We consider the problem of interpolation of scattered data in \mathbb{R}^3 and propose a solution based on Nielson’s minimum norm network and triangular Bézier patches. Our algorithm applies splitting to all triangles of an associated triangulation and constructs G^1 -continuous bivariate interpolant consisting of quartic triangular Bézier patches. The algorithm is computationally simple and produces visually pleasant smooth surfaces. We have created a software package for implementation, 3D visualization and comparison of our algorithm and the known Shirman and Séquin’s method which is also based on splitting and quartic triangular Bézier patches. The results of our numerical experiments are presented and analysed.

Keywords: scattered data interpolation, minimum norm networks, triangular Bézier surfaces

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