A FRACTAL INTERPOLATION FUNCTION THROUGH SHEAR FACTOR WITH PERTURBATION ERROR ANALYSIS

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Abstract:
Fractal interpolation (FI) is widely used in nonlinear issues of natural and social sciences as it provides a constructive way to describe an irregular structure of data. A new approach of FI function (FIF) is proposed in this paper to represent uncertainty of irregular data. The proposed method is based on vertical shear factor instead of vertical scaling factor which is used in existing FI. Experiments were performed using existing datasets which confirmed the practical usefulness of the proposed method. A comparison with existing methods was also made to further verify the effectiveness of the proposed method. Furthermore, the criteria of the perturbed iterated function system (IFS) is proposed in order to satisfy the FI conditions and was explained with the help of an example. In addition, the error estimation between two IFS using the proposed refined equation is also presented.

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