TRANSFINITE SHEPARD INTERPOLATION

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SUMMARY

In 1968, Donald Shepard introduced a new procedure for bivariate scattered data interpolation. His technique constructs the interpolated value as an inverse distance based weighted mean of the given values and is easily extendable to any dimension. Two of the main advantages of this method over other methods for scattered data interpolation is the explicit form of the interpolatory function and the generality of the method which can be applied to any data structure of any dimension.

During the last four decades, Shepard's method was modified and improved such that it could be successfully applied to specific problems which demanded specific results.

The term "transfinite interpolation" has been used to describe the problem of constructing a surface that passes through a given collection of curves, i.e., the surface must interpolate infinitely many points. In a more general context, the interpolation problem requires the construction of a function that takes on prescribed values on some collection of nodes. In this sense, transfinite interpolation is a special type of a boundary value problem.

The Shepard method can be easily adapted to be applicable to this type of problems.

REFERENCES