Non-linear Harten's Multiresolution on the Quincunx Pyramid

Multiresolution transforms provide useful tools for image processing applications. For an optimal representation of the edges, it is crucial to develop nonlinear schemes which are not based on tensor product. This paper links the non separable quincunx pyramid and the nonlinear discrete Harten's multiresolution framework. In order to obtain the stability of these representations, some new multiresolution processing algorithms are introduced. A prescribed accuracy in various norms is ensured by these strategies. Explicit error bounds are presented. Finally, a new non-linear reconstruction is proposed and tested on several images.

Key Words. Nonlinear discrete multiresolution, non separable, quincunx pyramid, error-control, image processing.

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