图形、图像、模式识别

二维经验模态分解边界效应抑制研究

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摘要　二维经验模态分解中边界效应抑制是一个关键问题，现有方法主要讨论一维信号端点效应抑制，基本思想是信号延拓，不适合对二维信号进行边界效应抑制。提出一种二维图像边界效应抑制方法，该方法根据对称性、局部性原理和牛顿插值理论，对边界点进行插值，获取部分边界极值，采用这些极值对边界进行线性插值获取图像每个边界像素点的极大值和极小值。把这种边界效应抑制方法应用到二维经验模态分解中收到了较好的实验效果。

关键词　二维经验模态分解　边界效应　固态模函数

分类号

Research restraint of border effect on bi-dimensional empirical mode decomposition

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Abstract

Restraint of border effect is a key issue in bi-dimensional empirical mode decomposition.The existing algorithms which are used to restrain border effect are based on one-dimensional empirical mode decomposition with the fundamental thought of signal extension.Therefore，they are not good ways for carrying out border restraint on bi-dimensional signals.In this paper，a new method which restrains border effect has been proposed in bi-dimensional image decomposition.This new method carries out extremal interpolation on border point according to the symmetrical principle，the partial principle and the Newton interpolation principle.Thus we can gain some border points extremal which are further used for linearity cubic interpolation to produce the maximum and the minimum for every border pixel.This new method for restraining border has been applyed to bi-dimensional empirical mode decomposition with a good experimental effect.

Key words　BEMD（Bi-dimensional Empirical Mode Decomposition）　border effect　IMF（Intrinsic Mode Function）

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