

[2009-0302]基于2DPCA的有效非局部滤波方法

郑钰辉, 孙权森, 夏德深

收稿日期 修回日期 网络版发布日期 2010-6-24 接受日期

摘要

最近, 非局部滤波方法已成为滤波领域的研究热点. 本文深入研究了基于预选择的非局部滤波方法, 指出了已有方法在提取图像片特征方面存在的不足, 利用二维主成分分析 (Two-dimensional Principal Component Analysis, 2DPCA) 提出了一种有效的非局部滤波方法. 该方法对基于预选择的非局部滤波方法主要贡献有: (1) 用于提取图像片特征的面向图像片的2DPCA; (2) 基于相似距离直方图的相似集自动选取方法; (3) 相似距离权重参数局部自适应选取方法. 实验结果表明, 本文方法对弱梯度、人脸、纹理、以及分段光滑图像均能取得较好的滤波效果.

关键词 [非局部滤波](#), [二维主成分分析](#), [非局部正则化](#), [图像片](#)

分类号

Efficient 2DPCA-based Non-local Means Filter

ZHENG Yu-Hui, SUN Quan-Sen, XIA De-Shen

Abstract

Recently, the non-local means filter has been a hot research topic in the image filtering field. The existing preselection based non-local means filters are analyzed intensively, and pointed out that they all have defects in terms of feature extraction from image patch. We employ 2DPCA to extract feature from image patch and propose an efficient non-local means filter. Mainly, our contributions to the preselection based non-local means filter are: (1) patch-oriented 2DPCA for extracting features from image patches; (2) automatic selection of the similar sets based on the histogram of similarity distance; (3) local adaptive determination of the similar weight coefficient parameter.

Experimental results show that new method can achieve better filtering results in a variety of images, such as weak gradient image, face image, texture image and piecewise image.

Key words [non-local means filter](#) [2DPCA](#) [non-local regularization](#) [image patch](#)

DOI :

通讯作者

作者个人主页

郑钰辉; 孙权森; 夏德深

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(1920KB\)](#)
- ▶ [\[HTML全文\]\(OKB\)](#)
- ▶ [参考文献\[PDF\]](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)

相关信息

- ▶ [本刊中 包含“非局部滤波, 二维主成分分析, 非局部正则化, 图像片”的相关文章](#)

▶ 本文作者相关文章

- [郑钰辉](#)
- [孙权森](#)
- [夏德深](#)