

Accepted Manuscript

A Region-based Video De-noising Algorithm Based on Temporal and Spatial Correlations

Hai-Miao Hu , Yuanyuan Gao , Qiang Guo , Bo Li

PII: S0925-2312(17)30902-5
DOI: [10.1016/j.neucom.2017.05.052](https://doi.org/10.1016/j.neucom.2017.05.052)
Reference: NEUCOM 18470



To appear in: *Neurocomputing*

Received date: 24 September 2016
Revised date: 8 March 2017
Accepted date: 22 May 2017

Please cite this article as: Hai-Miao Hu , Yuanyuan Gao , Qiang Guo , Bo Li , A Region-based Video De-noising Algorithm Based on Temporal and Spatial Correlations , *Neurocomputing* (2017), doi: [10.1016/j.neucom.2017.05.052](https://doi.org/10.1016/j.neucom.2017.05.052)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

A Region-based Video De-noising Algorithm Based on Temporal and Spatial Correlations*

Hai-Miao Hu^{1, 2, *}, Yuanyuan Gao^{1, *}, Qiang Guo¹, Bo Li^{1, 2, †}

1. Beijing Key Laboratory of Digital Media, School of Computer Science and Engineering, Beihang University, Beijing 100191, China

2. State Key Laboratory of Virtual Reality Technology and Systems, Beihang University, Beijing 100191, China

* The authors contributed equally to this work.

Abstract: Video de-noising is important for display and subsequent analysis. However, it remains challenging with regard to structured noise and temporal smoothness. This paper proposes a region-based video de-noising algorithm. First, the luma component of each frame is explicitly divided into a moving region and a non-moving region. Then, 3D structures are formed for different regions according to their different temporal characteristics. A bilateral filter is extended to 3D and subsequently employed for luma component de-noising. Second, de-noising for chroma is proposed instead of a simple transplantation of the de-noising for luma. The edge information within the de-noised luma is referred to during chroma de-noising based on the joint bilateral filter. The experimental results demonstrate that the proposed de-noising algorithm, which outperforms state-of-the-art algorithms, can not only efficiently remove the noise but also maintain temporal smoothness among neighboring frames.

Index Terms- De-noising, temporal-spatial, chroma noise, video de-noising, bilateral filter

This work was partially supported by the National Key Research and Development Program (Grant No.2016YFC0801003) and the National Natural Science Foundation of China (No. 61370121).

† Corresponding Author: Bo Li (Email: boli@buaa.edu.cn)

Download English Version:

<https://daneshyari.com/en/article/4946950>

Download Persian Version:

<https://daneshyari.com/article/4946950>

[Daneshyari.com](https://daneshyari.com)