Accepted Manuscript

Fuzzy Averaging Filter For Impulse Noise Reduction In Colour Images With A Correction Step

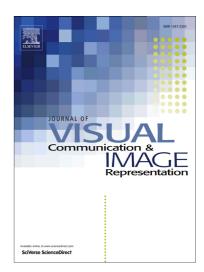
Valentín Gregori, Samuel Morillas, Bernardino Roig, Almanzor Sapena

PII: S1047-3203(18)30150-0

DOI: https://doi.org/10.1016/j.jvcir.2018.06.025

Reference: YJVCI 2229

To appear in: J. Vis. Commun. Image R.



Please cite this article as: V. Gregori, S. Morillas, B. Roig, A. Sapena, Fuzzy Averaging Filter For Impulse Noise Reduction In Colour Images With A Correction Step, *J. Vis. Commun. Image R.* (2018), doi: https://doi.org/10.1016/j.jvcir.2018.06.025

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.

ACCEPTED MANUSCRIPT

Fuzzy Averaging Filter For Impulse Noise Reduction In Colour Images With A Correction Step

Valentín Gregori^a, Samuel Morillas^b, Bernardino Roig^a, Almanzor Sapena^a

^a Instituto de Investigación para la Gestión Integrada de Zonas Costeras, Universitat
 Politècnica de València, Campus de Gandia, Spain
^b Instituto Universitario de Matemática Pura y Aplicada, Universitat Politècnica de
 València, Campus de Gandia, Spain

Abstract

In this paper we propose a fuzzy detection and reduction method for impulse noise in colour images. Detection is based on the fuzzyfication of a well-known statistic called ROD. The noise degrees obtained are used to reduce impulses by employing a fuzzy averaging between the input colour vector and a robust estimate of noise-free colour vector within the input neighbourhood. Fuzzy averaging has some advantages in terms of both noise reduction and detail preservation in front of detect and replace approaches because of threshold based decisions of the latter. However, robustness of the former is lower. We solve this problem by including a correction mechanism that checks the fuzzy noise degree of the output and replaces it with a robust colour vector either when noise has not been properly reduced or when a colour artefact has been introduced. We carry out a thorough study of the method parameter setting and give a convenient and robust setting. Experimental results show that our approach is very robust in front of four different types of impulse noise.

 $\label{eq:Keywords: Color Image Filter, Correction Step, Fuzzy Filter, Impulse Noise} Keywords: \quad \text{Color Image Filter, Correction Step, Fuzzy Filter, Impulse Noise}$

2010 MSC: 68U10, 94A08, 94D05

^{*}Corresponding author: smorillas@mat.upv.es

Download English Version:

https://daneshyari.com/en/article/6938218

Download Persian Version:

https://daneshyari.com/article/6938218

<u>Daneshyari.com</u>