

Accepted Manuscript

Digital blind watermarking based on depth variation prediction map and DWT for DIBR free-viewpoint image

Yong-Seok Lee, Young-Ho Seo, Dong-Wook Kim

PII: S0923-5965(18)30246-7

DOI: <https://doi.org/10.1016/j.image.2018.09.004>

Reference: IMAGE 15442

To appear in: *Signal Processing: Image Communication*

Received date : 17 March 2018

Revised date : 9 September 2018

Accepted date : 10 September 2018

Please cite this article as: Y.-S. Lee, et al., Digital blind watermarking based on depth variation prediction map and DWT for DIBR free-viewpoint image, *Signal Processing: Image Communication* (2018), <https://doi.org/10.1016/j.image.2018.09.004>

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.



Digital Blind Watermarking based on Depth Variation Prediction Map and DWT for DIBR Free-Viewpoint Image

Yong-Seok Lee^a, Young-Ho Seo^b, Dong-Wook Kim^b*

^aIntelligent Image Processing Research Center of Korea Electronics Technology Institute,
Daewangpangyo-ro 712, Bundang-gu, Seongnam-si, Gyeonggi-do 13888, Korea

^bDepartment of Electronic Materials Engineering, Kwangju University, 20, Gwangun-ro,
Nowon-Gu, Seoul 01897, South Korea

Abstract

The free-view image could suffer from a viewpoint change attack, although it may be not malicious. This paper focuses not only on this viewpoint change attack, but also on the other traditional and the geometric attacks. We propose a digital watermarking scheme to protect the ownership of a free-view 2D or 3D image, such that the viewer watches the image(s) by rendering an arbitrary viewpoint image (or multiple images) with the received texture image and its depth image. First, the proposed scheme generates a special map, termed the depth variation prediction map (DVPM), to find locations that are safe from viewpoint change. A 3-level Mallat-tree 2-dimensional discrete wavelet transform (2D DWT) is also used from which the three horizontally low-pass filtered and vertically high-pass filtered subbands are used as the watermark embedding regions, in conjunction with the DVPM. Next, Multiples of the watermark data are embedded into the three subbands, and each watermark bit is embedded into a 2D DWT coefficient by a quantization index modulation (QIM) method, where the quantization step is decided by considering the energy of each subband. In extracting the watermark data, the multiple watermark data are extracted, and the most frequent value in each bit position is taken from the extracted data to

*Corresponding author

Email address: dwkim@kw.ac.kr (Dong-Wook Kim)

Download English Version:

<https://daneshyari.com/en/article/11028046>

Download Persian Version:

<https://daneshyari.com/article/11028046>

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