

Accepted Manuscript

Aligned and Non-Aligned Double JPEG Detection Using Convolutional Neural Networks

M. Barni, L. Bondi, N. Bonettini, P. Bestagini, A. Costanzo, M. Maggini, B. Tondi, S. Tubaro

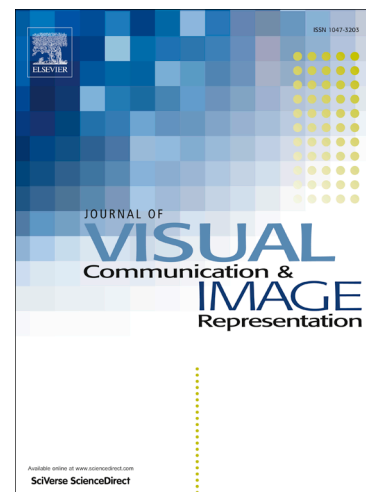
PII: S1047-3203(17)30175-X
DOI: <http://dx.doi.org/10.1016/j.jvcir.2017.09.003>
Reference: YJVC I 2052

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

Received Date: 20 March 2017
Revised Date: 2 August 2017
Accepted Date: 4 September 2017

Please cite this article as: M. Barni, L. Bondi, N. Bonettini, P. Bestagini, A. Costanzo, M. Maggini, B. Tondi, S. Tubaro, Aligned and Non-Aligned Double JPEG Detection Using Convolutional Neural Networks, *J. Vis. Commun. Image R.* (2017), doi: <http://dx.doi.org/10.1016/j.jvcir.2017.09.003>

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.



Aligned and Non-Aligned Double JPEG Detection Using Convolutional Neural Networks

M. Barni¹, L. Bondi², N. Bonettini², P. Bestagini², A. Costanzo¹,
M. Maggini¹, B. Tondi¹, S. Tubaro²

¹*Department of Information Engineering and Mathematics, University of Siena - Italy*

²*Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano - Italy*

Abstract

Due to the wide diffusion of JPEG coding standard, the image forensic community has devoted significant attention to the development of double JPEG (DJPEG) compression detectors through the years. The ability of detecting whether an image has been compressed twice provides paramount information toward image authenticity assessment. Given the trend recently gained by convolutional neural networks (CNN) in many computer vision tasks, in this paper we propose to use CNNs for aligned and non-aligned double JPEG compression detection. In particular, we explore the capability of CNNs to capture DJPEG artifacts directly from images. Results show that the proposed CNN-based detectors achieve good performance even with small size images (i.e., 64x64), outperforming state-of-the-art solutions, especially in the non-aligned case. Besides, good results are also achieved in the commonly-recognized challenging case in which the first quality factor is larger than the second one.

Keywords: Image forensics, double JPEG detection, double JPEG localization, convolutional neural networks.

1. Introduction

In the last decades, due to the wide availability of easy-to-use imaging software, diffusion of tampered content has become a widespread phenomenon. Among the techniques developed by the image forensic community to fight this

Download English Version:

<https://daneshyari.com/en/article/4969232>

Download Persian Version:

<https://daneshyari.com/article/4969232>

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