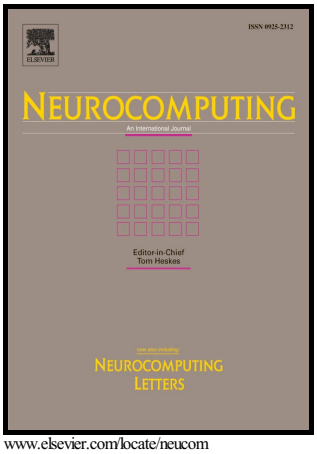

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Detection of Double Compression in MPEG-4 Videos Based on Block Artifact Measurement ☆

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Abstract

In this paper, a novel double MPEG-4 compression detection method is proposed based on block artifact measurement. According to the properties of recompressed frames, an adaptive post-filtering technique is used to measure the strength of block artifacts in decompression domain. Then, the measurement of block artifacts is combined with the Variation of Prediction Footprint (VPF) using an adjustive parameter for each frame. This combination aims to enhance the robustness of the measurement sequence against degradations caused by lossy recompression. Finally, a temporal periodic analysis method is applied to the measurement sequence to detect double compression and estimate the size of the original Group of Pictures (GOP). The performance of the proposed method is evaluated on several public-available standard videos compared with several existing algorithms. Experimental results demonstrate the proposed method has better detection capability and estimates original GOP structures more accurately. Besides, the proposed method is more robust against different transcoding processes.

Keywords: video forensics, MPEG-4, double compression, GOP estimation, block artifact

1. Introduction

Nowadays, with the popularization of inexpensive and easy-to-use video editing tools, forgers can change the original video contents without any professional knowledge. The potential tampering operations seriously debase the integrity

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