Title: Ambiguity attacks on watermarking algorithm based on chirp z-transform, discrete wavelet transform, and singular value decomposition

Author: id="aut0005" orcid="0000-0002-9000-4210" author-id="S2314717216301179-4408c7c6ee9ced5049287ec4d3c401d4"> Khaled Loukhaoukha id="aut0010" author-id="S2314717216301179-f6caceb92acbb036aae8cdb52ee0cadc"> Ahmed Refaey id="aut0015" author-id="S2314717216301179-16d7dad8478d402c91488b17b9f874f0"> Khalil Zebbiche

PII: S2314-7172(16)30117-9
DOI: http://dx.doi.org/doi:10.1016/j.jesit.2016.12.011
Reference: JESIT 145

To appear in:

Received date: 31-3-2016
Revised date: 10-10-2016
Accepted date: 10-12-2016

Please cite this article as: Khaled Loukhaoukha, Ahmed Refaey, Khalil Zebbiche, Ambiguity attacks on watermarking algorithm based on chirp z-transform, discrete wavelet transform, and singular value decomposition, *<![CDATA[Journal of Electrical Systems and Information Technology]]>* (2017), http://dx.doi.org/10.1016/j.jesit.2016.12.011

Ambiguity attacks on watermarking algorithm based on chirp z-transform, discrete wavelet transform, and singular value decomposition

Khaled Loukhaoukha[1-2], Ahmed Refaey[3], and Khalil Zebbiche[1-4]

[1]Centre de Recherche Développement de la Gendarmerie Nationale, Algiers, Algeria

[2]Electrical Engineering and Computer Engineering Department, Laval University, Quebec, Canada

[3]Electrical and Computer Engineering Department, Manhattan College, Riverdale, New York, USAa

[4]School of Electronics, EE and CS Department, Queen's University, Belfast, UK

I. Abstract

In this paper, it is shown that there is a fundamental flaw in the paper entitled "A watermarking algorithm based on chirp z-transform, discrete wavelet transform, and singular value decomposition" by Agoyi et al. [1]. The algorithm has watermark ambiguity problem and could not be used as copyright protection and content authentication as stated in the paper.

Index Terms

Digital watermarking, singular value decomposition, chirp z-transform , discrete wavelet transform, false positive detection.

II. Introduction

Recently, Agoyi et al. [1] proposed a watermarking algorithm based on chirp z-transform, discrete wavelet transform, and singular value decomposition and demonstrated its robustness against several attacks. This algorithm is fundamentally flawed, which leads to false positive detection problem. Actually, it was due to improper algorithm design.