

A Discrete Wavelet Based Watermarking Scheme for Authentication of Medical Images

Kaiser J. Giri, Islamic University of Science and Technology, Awantipora, India

Rumaan Bashir, Islamic University of Science and Technology, Awantipora, India

Javaid Iqbal Bhat, Islamic University of Science and Technology, Awantipora, India

ABSTRACT

The growth and emergence of telemedicine has resulted into considerable increase in the transfer of medical images between various health centers over computer networks for various purposes, such as diagnosis, clinical interpretation, and archives. The security of these images is a serious concern since these images can be manipulated during their transmission over the network. Moreover, as the authentication of the medical images is required for various legal purposes; the information security requirement specifications specified by various legislative rules must be adhered by the concerned stakeholders. In this research, a discrete wavelet-based watermarking scheme has been proposed for the authentication of medical images. The experimental results obtained have shown that the proposed scheme is a secure one and robust against various common image processing attacks.

KEYWORDS

Accuracy Rate, Authentication, Digital Watermarking, Discrete Wavelet Transformation, Imperceptibility, Medical Images, Robustness, Security, Telemedicine

INTRODUCTION

The dawn of digitization has resulted into a knowledge explosion and has motivated & encouraged people to digitize their intellectual artifacts. Moreover, the recent developments in Internet & Communication Technology (ICT) together with relatively inexpensive digital recording and storage peripherals have created a multimedia era bringing conveniences to the people in sharing their digital data which also includes medical images. The medical images are important resources for identifying disease of the patients. They are also being used for insurance claims and as evidence in the court of law. In addition, due to growth of telemedicine there has been a tremendous increase in the transfer of medical images between healthcare centers at a distance. Due to emergence of electronic healthcare systems, the aspects of conventional paper-based healthcare are rapidly changing. The e-healthcare is taking a lead in healthcare and its related activities. It is reducing the distance between a doctor & a patient thus making the physical distance irrelevant. However, in the absence of concrete security

DOI: 10.4018/IJEHMC.2019100103

Copyright © 2019, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.