灰階色差視覺密碼於 DICOM 醫療影像之加密與浮水印的研究

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摘要

由於醫療資訊學的快速發展，許多醫學影像已數位化，而數位化之醫學影像除便於儲存及傳輸外，更有助於醫生做診療。然而將未保護的醫療影像直接於網路上傳輸，極容易被擷取利用，而侵害病患的隱私權、或侵犯影像原作者的著作權。基於視覺密碼的原理，本文研究目的為開發可適用於 DICOM 3.0 灰階醫療影像之色差視覺加密技術與數位浮水印製作技術，以增加醫療影像於網路傳輸的安全性，當有著作權侵害時，可將浮水印取出驗證以證明醫療影像之原作者為誰。實做結果顯示，本研究提出以灰階色差視覺加密法製作 DICOM 灰階醫療影像之加密與浮水印技術，確可為保護隱私權與智慧財產權提供另一種簡易、直接且強韌有效的方法。

關鍵字：醫療影像、視覺密碼、色差視覺加密技術、數位浮水印。

A Study of Encryption and Watermarking for DICOM Medical Images Based on Grey-Level Chromatic Visual Cryptography

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Abstract

The medical-informatics vigorously develops now, many medical images have been digitalized, which are not only convenient to be saved and transferred but more helpful for doctors to diagnose. It is easy to result in the privacy invasion and copyright infringement if non-protection medical images transmit in the network directly. Based on visual cryptography, the objective of this study is to develop encryption and digital watermarking technologies for DICOM 3.0 grey-level medical images using the chromatism visual encryption method. The result reveals that the proposed technologies are simple, direct and robust to protect the privacy and copyright of DICOM grey-level medical images when they are transferred in the Internet.

Key words: medical images, visual cryptography, chromatism visual encryption, digital watermarking