

Nested Quantization Index Modulation for Reversible Watermarking and Its Application to Healthcare Information Management Systems

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Abstract

Digital watermarking has attracted lots of researches to healthcare information management systems for access control, patients' data protection, and information retrieval. The well-known quantization index modulation (QIM)-based watermarking has its limitations as the host image will be destroyed; however, the recovery of medical images is essential to avoid misdiagnosis. In this paper, we propose the nested QIM-based watermarking, which is preferable to the QIM-based watermarking for the medical image applications. As the host image can be exactly reconstructed by the nested QIM-based watermarking. The capacity of the embedded watermark can be increased by taking advantage of the proposed nest structure. The algorithm and mathematical model of the nested QIM-based watermarking including forward and inverse model is presented. Due to algorithms and

architectures
of forward and inverse nested QIM,
the concurrent programs and special
processors for the nested QIM-based
watermarking are
easily implemented.

Keyword : Digital Watermarking, QIM, Healthcare