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# Medical image authentication using SLT and IWT schemes

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## Abstract

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Over the years, different watermarking techniques have been used for medical image authentication purposes. Some techniques have been presented to detect tampering in the medical image while others can also recover the tampered region after the tamper detection. Many of the previous medical image authentication schemes have successfully achieved their aims; however, the robustness of the authentication scheme against unintentional attacks has not been highlighted sufficiently. This paper presents a new medical image authentication scheme in which the medical image is divided into two regions (i.e., region of interest (ROI) and region of non-interest (RONI)). Then two watermarking methods based on Slantlet transform (SLT) are used

to embed data in the ROI and the RONI. The proposed scheme can be used for tamper detection, localization, and recovery in addition to the data hiding. To generate the recovery information of the ROI, a new method has been proposed based on the integer wavelet transform (IWT) coefficients. The experiments that have been conducted to evaluate the proposed authentication scheme proved that it is efficient not only in achieving its main tasks that have been mentioned above but also in having robustness against unintentional attacks (i.e., JPEG compression, additive Gaussian noise (AGN), and salt-and-pepper noise) and that makes it more suitable for the practical applications.

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