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Enhancing the Security of Medical Images in Telemedicine Using Region-based Crypto-Watermarking Approach

Publisher: IEEE Cite This PDF

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| I. Introduction | Abstract: Along with maintaining the confidentiality and privacy of patient information, the preservation and authentication of internal physiological features of tissues and organ... View more |
| II. Related Work In Literature | |
| III. Methodology | ► Metadata Abstract: Along with maintaining the confidentiality and privacy of patient information, the preservation and authentication of internal physiological features of tissues and organs present in any type of medical images is equally important while transmitting medical images in Telemedicine. To achieve it, this paper presents a region-based approach for Medical Image by integrating cryptography in the digital watermarking. To preserve the internal physiological features, medical image is separated into two regions – Region of Interest (ROI) and Not-a-Region of Interest (NROI). ROI contains the important internal physiological features of human body. Therefore, no information is embedded in ROI to preserve it. Cryptography is integrated only for generation and exchange of the secret key of ROI using Elliptic curve cryptography. Patient information and secret key is embedded into NROI using wavelet-based hybrid watermarking technique. The proposed work is tested on varieties of medical image dataset of MRI, CT scan and X-ray against various intentional and unintentional attacks and evaluated with performance metrics PSNR (Peak signal to Noise Ratio), SSIM (Structural Similarity Index), NC (Normalized Correlation) and BER (Bit Error Ratio). Secret key is matched at receiving end to authenticate the |
| IV. Implementation and Results | |
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