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Intelligent security and privacy of electronic health records using biometric images
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Abstract
Background: In the presence of Cloud Environment and the migration of Electronic Health Systems and records to the Cloud, patient privacy has become an emergent problem for healthcare institutions. Government bylaws, electronic health documentation, and innovative internet health services generate numerous security issues for healthcare conformity and information security groups. To deal with these issues, healthcare institutes must protect essential IT infrastructure from unauthorized use by insiders and hackers. The Cloud Computing archetype allows for E-Health methods that improve the features and functionality of systems on the cloud. On the other hand, sending patients' medical information and records to the Cloud entails a number of risks in the protection and privacy of the health records during the communication process. Aim: In this paper, a solution is proposed for the security of Electronic Health Records (EHRs) in cloud environment during the process of sending the data to the cloud. In addition, the proposed method uses biometric images that allow for unified patient identification across cloud-based EHRs and across medical institutions. Method: To protect the privacy of patients' information and streamline the migration process, a watermarking-based method is proposed for health care providers to ensure that patients' data are only accessible to authorized personnel. Patients' information, such as name, id, symptoms, diseases, and previous history, is secured in biometric images of patients as an encrypted watermark. Results: Quality and impeccability analysis and robustness were performed to test the proposed method. The PSNR values show that the proposed method produced excellent results. Conclusion: The robustness and impressibility of the proposed method were tested by subjecting the watermarked images to different simulated attacks. The watermarks were largely impermeable to varied and repeated attacks. © 2019 Bentham Science Publishers.

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