

SECURE ATTRIBUTE-BASED SIGNATURE SCHEME WITH MULTIPLE AUTHORITIES FOR BLOCKCHAIN IN ELECTRONIC HEALTH RECORDS SYSTEMS

Abstract:

Electronic Health Records (EHRs) are entirely controlled by hospitals instead of patients, which complicates seeking medical advices from different hospitals. Patients face a critical need to focus on the details of their own healthcare and restore management of their own medical data. The rapid development of blockchain technology promotes population healthcare, including medical records as well as patient-related data. This technology provides patients with comprehensive, immutable records and access to EHRs free from service providers and treatment websites. In this paper, to guarantee the validity of EHRs encapsulated in blockchain, we present an attribute-based signature scheme with multiple authorities, in which a patient endorses a message according to the attribute while disclosing no information other than the evidence that he has attested to it. Furthermore, there are multiple authorities without a trusted single or central one to generate and distribute public/private keys of the patient, which avoids the escrow problem and conforms to the mode of distributed data storage in the blockchain.

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