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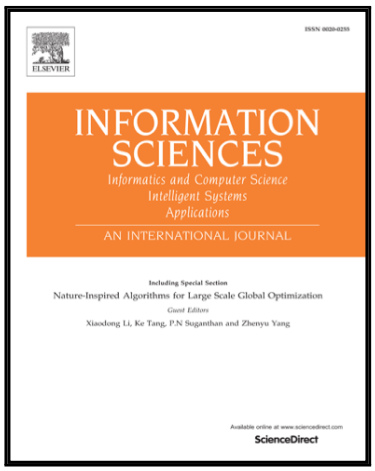

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A Compressive Sensing Based Privacy Preserving Outsourcing of Image Storage and Identity Authentication Service in Cloud

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Abstract

The theory of Compressive Sensing (CS) enables the compact storage of image datasets which are exponentially generated today. In this application, the high computational complexity CS reconstruction process is considered to be outsourced to the cloud for its abundant computing and storage resources. Although it is promising, how to protect data privacy and simultaneously maintain management of the image remains challenging. To address the challenge, we propose a novel outsourced image reconstruction and identity authentication service in cloud, which integrates the techniques of signal processing in the CS domain and computation outsourcing. In our system, the image CS samples are outsourced to cloud for reduced storage. For privacy, the scheme ensures the cloud to securely reconstruct image without revealing the underlying content. For management, whether the cloud determines to supply the reconstruction service is depending on the identity authentication result. Theoretical analysis and empirical evaluations show a satisfactory

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