Abstract

The increasing globalization led to the transmission of vast amount of digital documents like texts, images, videos or audios over the internet from one point to another. However, some of these documents might be highly confidential and its transmission over the internet must be protected from unauthorized access. In this paper, we have proposed a novel hybrid Arnold transform scheme based on dual tree complex wavelet transform with block shuffling internally as well as externally. In this scheme, we have provided double layer of security by utilizing the multi-resolution property of wavelet using Arnold transform and block shuffling. In contrast to the discrete wavelet transform (DWT), the design of Dual Tree Complex Wavelet Transform poses good directional properties for diagonal features and is rugged to shift invariance. Our scheme provides high security as even after the extraction of first layer, without knowing the extraction algorithm, original image cannot be recovered in its entirety. The proposed scheme is tested on various test images and the obtained results show the effectiveness of the proposed scheme.
Index Terms

Computer Science  Security

Keywords

Arnold transforms; block shuffling; Dual-tree complex wavelet transform.