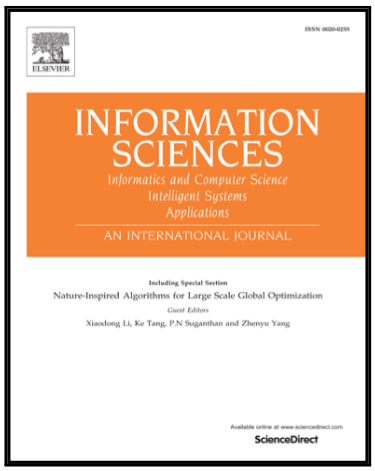

Design of image cipher using block-based scrambling and image filtering

Zhongyun Hua, Yicong Zhou

PII: S0020-0255(17)30541-8
DOI: 10.1016/j.ins.2017.02.036
Reference: INS 12759

To appear in: *Information Sciences*

Received date: 12 May 2016
Revised date: 19 December 2016
Accepted date: 15 February 2017

Please cite this article as: Zhongyun Hua, Yicong Zhou, Design of image cipher using block-based scrambling and image filtering, *Information Sciences* (2017), doi: 10.1016/j.ins.2017.02.036

Highlights

- An image cipher using block-based scrambling and image filtering (IC-BSIF) is introduced;
- It is the first time that image filtering is used to do encryption;
- IC-BSIF uses the well-known substitution-permutation network and strictly follows the principles of confusion and diffusion;
- The block-based scrambling is to fast separate neighboring pixels to different rows and columns, and thus can sfficiently weakness the strong correlation between adjacent pixels;
- Using randomly generated masks, the operation of image filtering can spread little change in plain-images to the entire pixels of cipher-images;
- IC-BSIF can encrypt different kinds of images into noise-like ones, and security evaluations demonstrate that it can achieve better performance than some state-of-the-art encryption schemes.