Image encryption using 2D Logistic-adjusted-Sine map

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Abstract
With complex properties of ergodicity, unpredictability and sensitivity to initial states, chaotic systems are widely used in cryptography. This paper proposes a two-dimensional logistic-adjusted-Sine map (2D-LASM). Performance evaluations show that it has better ergodicity and unpredictability, and a wider chaotic range than many existing chaotic maps. Using the proposed map, this paper further designs a 2D-LASM-based image encryption scheme (LAS-IES). The principle of diffusion and confusion are strictly fulfilled, and a mechanism of adding random values to plain-image is designed to enhance the security level of cipher-image. Simulation results and security analysis show that LAS-IES can efficiently encrypt different kinds of images into random-like ones that have strong ability of resisting various security attacks. (C) Elsevier Inc. All rights reserved.

Keywords
Author Keywords: Chaotic map; Chaotic encryption; Confusion and diffusion; Image encryption

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Funding

<table>
<thead>
<tr>
<th>Funding Agency</th>
<th>Grant Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macau Science and Technology Development Fund</td>
<td>FDCT/016/2015/A1</td>
</tr>
<tr>
<td>Research Committee at University of Macau</td>
<td>MYRG2014-00003-FST MYRG113 (Y1-L3)-FST12-ZYC MYRG01/ZYC/2013/FST</td>
</tr>
</tbody>
</table>

Publisher
ELSEVIER SCIENCE INC, STE 800, 230 PARK AVE, NEW YORK, NY 10169 USA

Journal Information
Performance Trends: Essential Science Indicators
Impact Factor: Journal Citation Reports

Categories / Classification

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