

学术探讨

## 一种改进的基于排序变换的图像全局置乱算法

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**摘要** 利用混沌系统的类随机性、遍历性以及参数对系统初值极端敏感的特点,提出了一种改进的基于混沌系统的图像全局置乱算法,并给出了算法的详细实现步骤。该算法利用混沌系统产生图像全局置乱矩阵,实现了在图像整体上的置乱,相比基于排序变换的图像置乱算法,具有良好的置乱性能。同时,由于该算法具有较低的时间复杂度,而全局置乱矩阵又显示出排列的强不规则性,因此,该混沌图像全局置乱算法具有较好的安全保密性能。最后,仿真和实验结果验证了本算法的有效性。

**关键词** [混沌系统](#) [图像全局置乱](#) [置乱度](#) [相关性](#)

分类号

## Improved picture total scrambling algorithm based on sort transformation

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### Abstract

An improved image total scrambling algorithm based on chaotic system,which utilizes the random-like,ergodic and extreme sensitivity to parameters and initial values of chaotic system is proposed in this paper,and detailed procedure is also given.The algorithm generates a image total scrambling matrix through a chaotic system and then perform scrambling on the total image,it has better scrambling performance compared with sort transformation based on chaotic system in literature.In the meantime,as the algorithm have lower time complexity,and also the total scrambling matrix has the strong irregularity,so the proposed new image total scrambling algorithm based on chaotic system possesses high-level security.At last,some simulations and experiments verified the effectiveness of the algorithm.

**Key words** [chaotic system](#) [image total scrambling](#) [scrambling degree](#) [correlation](#)

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