

博士论坛

一种改进的Arnold Cat变换图像置乱算法

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摘要 Arnold Cat变换是经典的图像置乱算法,但其存在密钥量小,置乱视觉效果差的缺点。同时置乱仅仅是重新排列图像各像素点的位置,像素值并没有发生改变,这样攻击者就可以通过统计分析等手段进行破译。针对Arnold Cat变换的不足,运用混沌理论,提出了一种基于均匀性的改进Arnold Cat变换置乱算法。仿真实验证明改进的算法具有密钥量大、置乱视觉效果好、图像的位置和像素值均发生本质改变等优点,增加了图像加密的安全性。

关键词 [图像置乱](#) [Arnold Cat变换](#) [混沌映射](#) [均匀置乱](#)

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Improved image scrambling algorithm of Arnold Cat transformation

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Abstract

Arnold Cat transformation is a classical algorithm of image scrambling. However, it has some disadvantages, such as small key quantities and not better visual effect. At the same time, it only changes the position of pixel point and the pixel value is fixed. So, the attacker may break down it through the statistics. Aiming at the disadvantages, an improved scrambling algorithm of Arnold Cat transformation using chaotic map is put forward. The experiment results show that the key quantities and scrambling effect are improved obviously, and the security of image encryption is increased.

Key words [image scrambling](#) [Arnold Cat transformation](#) [chaotic map](#) [even scrambling](#)

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