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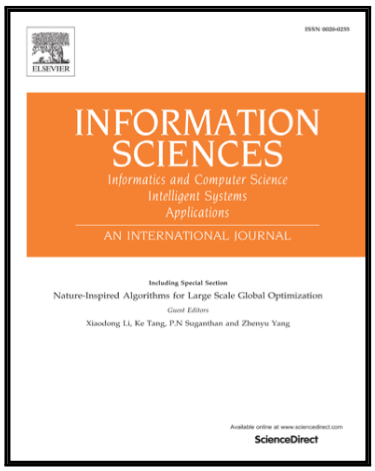

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Remote Sensing Image Magnification Study Based on the Adaptive Mixture Diffusion Model

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Abstract- In this paper, we propose an adaptive remote sensing image magnification approach. First, an edge stopping function is added to the regularization term of the self-snake model to produce the improved self-snake model, which has a stronger edge-preservation ability. In addition, according to the image gradient information, we put forward a strictly monotonically increasing weight function, which is used to discriminate between edge regions and flat regions. Finally, the adaptive remote sensing image magnification method, which synthesizes the improved self-snake model and Tikhonov regularization by the new weight function is proposed. The proposed model can adaptively adjust the weighting to determine which part plays a more important role in the current state. This model can well protect the edge and texture information of remote sensing images and effectively remove the noise. Experimental results on test images efficiently demonstrate the good performance of the proposed model in terms of both speed and accuracy.

Index Terms—Remote sensing image; image magnification; improved self- snake model; Tikhonov regularization; adaptive mixture model

1. Introduction

Remote sensing images have found practical applications in many fields, such as military imaging, aerospace imaging, and agricultural image analysis. Unlike general natural images, the

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