

# 基于卷积神经网络的遥感图像去噪算法

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**摘 要:** 由于成像设备的局限和外部环境的干扰等因素影响, 遥感图像在信息数字化和传输过程中常常包含大量噪声, 导致图像质量下降, 对后续图像处理产生不利影响. 本文提出了一种基于卷积神经网络的遥感图像去噪算法, 将图像去噪过程作为神经网络的拟合过程, 使用含有批量正则化层的深度神经网络, 利用残差学习策略, 可以对多种噪声等级的遥感图像进行去噪处理. 实验表明, 本文算法不仅有效提升了去噪效果, 还缩短了网络的训练时间.  
**关键词:** 图像去噪; 卷积神经网络; 遥感图像; 深度学习

## Remote sensing image denoising based on

## convolutional neural network

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**Abstract:** In the process of digitizing and transmitting information, due to the limitations of imaging equipment and the interference of external environment, remote sensing images often contain a lot of noise, which leads to the degradation of image quality and adversely affects subsequent image processing. In this paper, a remote sensing image denoising algorithm based on convolutional neural network is proposed. The algorithm considers the image denoising process as the neural network fitting process. Using the residual learning strategy and the deep neural network with batch regularization layer, it can denoise the remote sensing images with various noise levels. Experiments show that the proposed algorithm not only effectively improves the denoising effect, but also shortens the training time of the network.

**Key words:** image denoising; convolutional neural network; remote sensing image; deep learning  
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