

An Aerial Image Segmentation Approach Based on Enhanced Multi-scale Co...

In this work, we proposed a novel aerial image segmentation method based on Convolutional Neural Network (CNN). Aerial images are the images captured from high attitudes above the ground. Processing and analyzing aerial images play central roles in terrain modeling, agricultural monitoring, city planning, environmental surveillance, etc. Aerial images are developing towards high resolution and large size, which poses a major challenge in pixel-level image segmentation. With the rapid development of deep learning technology, the application of deep learning to image semantic segmentation has obtained satisfactory effect. The main structure of the proposed network adopts U-Net. In order to capture objects of different scales in the deep features, a group of cascaded dilated convolution is inserted at the bottom of U-Net which has different dilation rates. Furthermore, to better optimize the network at different scales, an auxiliary loss function is proposed to be integrated in the cascaded dilated convolution. The effectiveness of the proposed method is evaluated on the Inria Aerial Image Labeling Data set. Experiment results show that the proposed method has better segmentation performance than existing approaches.

Domain: Image Processing - Image Segmentation

Technology: MATLAB