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Sea-Land Segmentation for Infrared Remote Sensing Images based on Superpixels and Multi-scale Features ☆

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Abstract

Sea-land segmentation is a key step for the information processing of ocean remote sensing images. Traditional sea-land segmentation algorithms ignore the local similarity prior of sea and land, and thus fail in complex scenarios. In this paper, we propose a new sea-land segmentation method for infrared remote sensing images to tackle the problem based on superpixels and multi-scale features. Considering the connectivity and local similarity of sea or land, we interpret the sea-land segmentation task in view of superpixels rather than pixels, where similar pixels are clustered and the local similarity are explored. Moreover, the multi-scale features are elaborately designed, comprising of gray histogram and multi-scale total variation. Experimental results on infrared bands of Landsat-8 satellite images demonstrate that the proposed method can obtain more accurate and more robust sea-land segmentation results than the traditional algorithms.

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