

## **Change Detection Method Based on Scale-Invariant Feature Transformation Keypoints and Segmentation for Synthetic Aperture Radar Image**

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**Abstract :** Synthetic aperture radar (SAR) image change detection has recently become a challenging problem owing to the existence of speckle noises. In this paper, an unsupervised distribution-free change detection for SAR image based on scale-invariant feature transform (SIFT) keypoints and segmentation is proposed. Firstly, the noise-robust SIFT keypoints which reveal the blob-like structures in an image are extracted in the log-ratio image to reduce the detection range. Then, different from the traditional change detection which directly obtains the change-detection map from the difference image, segmentation is made around the extracted keypoints in the two original multitemporal SAR images to obtain accurate changed region. At last, the change-detection map is generated by comparing the two segmentations. Experimental results on the real SAR image dataset demonstrate the effectiveness of the proposed method.

**Keywords :** change detection, Synthetic Aperture Radar (SAR), Scale-Invariant Feature Transformation (SIFT), segmentation

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