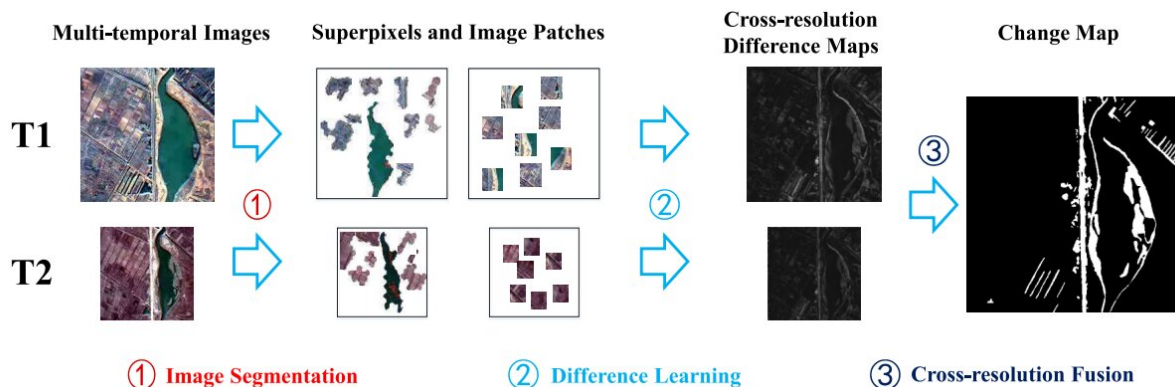


# Cross-resolution difference learning for change detection between multitemporal images

August 30 2021, by Zhang Nannan



Flowchart of the proposed CD method. Credit: XIOPM

Recently, a team led by Prof. Lu Xiaoqiang from the Xi'an Institute of Optics and Precision Mechanics (XIOPM) of the Chinese Academy of Sciences proposed cross-resolution difference learning for unsupervised change detection. Their up-to-date result was published in *IEEE Transactions on Geoscience and Remote Sensing*.

Change detection (CD) mainly aims at recognizing the differences between multitemporal images captured over the same geographical area at different times. Compared with methods based on cumbersome

labeled change [information](#), unsupervised CD methods can generate a change map without [prior knowledge](#) about the change information, which has attracted widespread attention.

Moreover, it is difficult to directly detect changes in the practical application, because many multitemporal images captured at different times have different resolutions with different sensor properties. For most existing methods, they usually resized multitemporal images to a unified size which has a [negative impact](#) on the final CD performance because of changing the original information of pixels.

To address the above problems, Lu and his [team members](#) proposed a cross-resolution difference learning method without resizing operations and cumbersome labels. The whole framework was disassembled into three modules, image segmentation, difference learning, and cross-resolution fusion.

According to the experiments results, the effectiveness of the proposed method are demonstrated under different evaluation metrics. In the future, the proposed CD method will provide a guide for designing novel framework of cross-resolution unsupervised change detection.

**More information:** Xiangtao Zheng et al, Unsupervised Change Detection by Cross-Resolution Difference Learning, *IEEE Transactions on Geoscience and Remote Sensing* (2021). [DOI: 10.1109/TGRS.2021.3079907](#)

Provided by Chinese Academy of Sciences

Citation: Cross-resolution difference learning for change detection between multitemporal images (2021, August 30) retrieved 24 April 2024 from

<https://techxplore.com/news/2021-08-cross-resolution-difference-multitemporal-images.html>

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