



Change Detection Method with Spatial and Spectral Information from Deep Learning

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Change detection is a key application of remote sensing technology. For multi-spectral images, the available spatial information and useful spectral information is both helpful for data analysis, especially change detection tasks. However, it is difficult that how to learn the changed features from spatial and spectral information meantime in one model. In this paper, we proposed a new method which combines 2-dimensional Convolutional Neural Network and 1-dimensional Recurrent Neural Network for learn changed feature. Compared with only using spectral information, the spatial information will be helpful to overcome temporal spectral variance issues. Our method extracts the spatial difference and spectral difference meantime, and these change information will be balanced in final memory cell of our model, and the leaned change information will be exploited to character change features for change detection. Finally, experiments are performed on two multi-temporal datasets, and the results show superior performance on detecting changes with spatial information and spectral information.

Index Terms— Change detection, multi-temporal images, recurrent neural network, convolutional neural network, deep learning, spatial information, spectral information