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Automatic Change Detection for High-Resolution Satellite Images of Urban and Suburban Areas

Authors : Antigoni Panagiotopoulou, Lemonia Ragia

Abstract : High-resolution satellite images can provide detailed information about change detection on the earth. In the present work, QuickBird images of spatial resolution 60 cm/pixel and WorldView images of resolution 30 cm/pixel are utilized to perform automatic change detection in urban and suburban areas of Crete, Greece. There is a relative time difference of 13 years among the satellite images. Multiindex scene representation is applied on the images to classify the scene into buildings, vegetation, water and ground. Then, automatic change detection is made possible by pixel-per-pixel comparison of the classified multi-temporal images. The vegetation index and the water index which have been developed in this study prove effective. Furthermore, the proposed change detection approach not only indicates whether changes have taken place or not but also provides specific information relative to the types of changes. Experimentations with other different scenes in the future could help optimize the proposed spectral indices as well as the entire change detection methodology.

Keywords : change detection, multiindex scene representation, spectral index, QuickBird, WorldView
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