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Author: Ms. Mina Al-saad
University of Dubai, United Arab Emirates, malsaad@ud.ac.ae

Ms. Nour Aburaed
University of Dubai, United Arab Emirates, noaburaed@ud.ac.ae

Dr. Marwa Chendeb EL RAI
University of Dubai, United Arab Emirates, mcelrai@ud.ac.ae

Mr. Saeed Al Mansoori
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, saeed.almansoori@mbrsc.ae

Prof. Hussain AL Ahmad
University of Dubai, United Arab Emirates, halahmad@ud.ac.ae

AUTONOMOUS OBJECT DETECTION IN SATELLITE IMAGES USING WFRCNN

Abstract

Object detection in remote sensing images has been a topic of interest that has gradually gained attention over the years due to the wide variety of related applications. Even though there is an extensive number of methods developed for object detection, there are still several challenges that remain unsolved, such as visual appearance variations, occlusions, and background clutter. Satellite images reveal a texture problem; it is difficult to differentiate between the background and the object of interest. In order to overcome this problem and exploit more of the spectral features of images, Discrete Wavelet Transform (DWT) is embedded into one of the most superior methods for object detection, which is Faster Region-based Convolutional Network (FRCNN). The accuracy of FRCNN is boosted by introducing the wavelet decomposition. The performance of the proposed strategy is tested, evaluated, and compared to the original FRCNN using two different datasets.