

A METHOD FOR ROBUST EXTRACTION OF CONTROL POINTS ON HIGH-RESOLUTION SATELLITE IMAGES

J. González^a V. Arévalo^{*a} C. Galindo^a

^a University of Málaga, Dept. of System Engineering and Automation, Campus Teatinos, 29071, Málaga, Spain

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ABSTRACT:

This paper presents a procedure to robustly distribute control point (CP) pairs in high-resolution satellite images as a preliminary step for accurate image registration. The proper distribution of the CPs is achieved by means of a quadtree decomposition of a coarse digital terrain model (DTM) of the sensed region. This technique parcels up the image according to its relief variance yielding almost planar pieces of land. A corner detector is then employed to identify key points in the reference image and an affinity-based feature tracker that searches for their corresponding corner in the target one. This search is executed in every parcel, selecting (at-least) one CP, ensuring thus denser distributions in rugged regions than in flat ones. Additionally, robustness to mismatches is attained by exploiting the intrinsic affine epipolar geometry of the two images. The proposed method has been successfully tested with a broad variety of panchromatic high-resolution images of the city of the Rincón de la Victoria (Málaga, Spain).

TOPIC: Remote sensing applications

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