A Block-Based Multi-feature Extraction Scheme for SAR Image Registration

Sourabh Paul and Umesh Chandra Pati
Department of Electronics and Communication Engineering
National Institute of Technology, Rourkela, Odisha

Abstract: In this letter, a block-based multi-feature extraction scheme is proposed to register the synthetic aperture radar (SAR) images. With appropriate modifications, the scale-invariant feature transform (SIFT) and the SAR-SIFT operators are used to extract two types of features including texture points and corner points from the SAR images. The input images are divided into a certain number of blocks and the two types of features are extracted from each of the blocks for the uniform distribution of the features. A novel scheme is presented to obtain these features in the same proportion from the input images. The proposed method has the advantages of proper controllability of the number of extracted features and the uniform distribution of the features. A correct match identification by local searching algorithm is proposed to significantly increase the number of correct matches between the SAR images. Experiments on three pairs of multimodal and multi-temporal SAR images demonstrate the effectiveness of the proposed method. More in IEEE Geoscience and Remote Sensing Letters (pp. 1387 – 1391, vol. 15, no. 9, Sept. 2018, DOI:10.1109/LGRS.2018.2842921).