عنوان مقاله:

SAR image despeckling based on sparse representation and structural features of image patches

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خلاصه مقاله:

Synthetic aperture radar (SAR) sensor collects imagery information and can be used in every climate conditions. The images taken by SAR are widely used in both civilian and military domains but unfortunately such images are always degraded by speckle noise which affects the subsequent image processing algorithms using SAR images as inputs.Recently many researchers have used sparse representation (SR) for a variety of applications including image denoising and classification and the resulting algorithms generally outperform the precedent methods. In this paper we propose to use SR for denoising SAR images corrupted by the multiplicative speckle noise. In the proposed method the dictionary used in sparse representation is first learnt using some high quality images and subsequently used for denoising a noisy image. In order to account for the structural information in patches of the image under operation, k-means clustering is also adopted to classify patches of the image into different clusters. We also propose the use of a dictionary learnt from completely noisy patches to further remove the residual noise. Experimental results and the comparison to another method based on SR proposed in the literature signifies the efficiency of the proposed algorithm.

کلمات کلیدی:

Sparse representation, Dictionary learning, Denoising, Speckle

لینک ثابت مقاله در پایگاه سیویلیکا: