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Synthetic Aperture Radar Remote Sensing Classification Using the Bag of Visual Words Model to Land Cover Studies

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Abstract : Classification of high resolution polarimetric Synthetic Aperture Radar (PolSAR) images plays an important role in land cover and land use management. Recently, classification algorithms based on Bag of Visual Words (BOVW) model have attracted significant interest among scholars and researchers in and out of the field of remote sensing. In this paper, BOVW model with pixel based low-level features has been implemented to classify a subset of San Francisco bay PolSAR image, acquired by RADARSAR 2 in C-band. We have used segment-based decision-making strategy and compared the result with the result of traditional Support Vector Machine (SVM) classifier. 90.95% overall accuracy of the classification with the proposed algorithm has shown that the proposed algorithm is comparable with the state-of-the-art methods. In addition to increase in the classification accuracy, the proposed method has decreased undesirable speckle effect of SAR images.

Keywords : Bag of Visual Words (BOVW), classification, feature extraction, land cover management, Polarimetric Synthetic Aperture Radar (PolSAR)
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