

Polarimetric Synthetic Aperture Radar Data Classification Using Support Vector Machine and Mahalanobis Distance

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Abstract : Polarimetric Synthetic Aperture Radar-based imaging is a powerful technique used for earth observation and classification of surfaces. Forest evolution has been one of the vital areas of attention for the remote sensing experts. The information about forest areas can be achieved by remote sensing, whether by using active radars or optical instruments. However, due to several weather constraints, such as cloud cover, limited information can be recovered using optical data and for that reason, Polarimetric Synthetic Aperture Radar (PolSAR) is used as a powerful tool for forestry inventory. In this [14]paper, we applied support vector machine (SVM) and Mahalanobis distance to the fully polarimetric AIRSAR P, L, C-bands data from the Nezer forest areas, the classification is based in the separation of different tree ages. The classification results were evaluated and the results show that the SVM performs better than the Mahalanobis distance and SVM achieves approximately 75% accuracy. This result proves that SVM classification can be used as a useful method to evaluate fully polarimetric SAR data with sufficient value of accuracy.

Keywords : classification, synthetic aperture radar, SAR polarimetry, support vector machine, mahalanobis distance

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