Abstract

The classification of remotely sensed images knows a large progress taking into consideration the availability of images with different resolutions as well as the abundance of classification's algorithms. Support Vector Machines (SVMs) are a group of supervised classification algorithms that have been recently used in the remote sensing field, a number of works have shown promising results by the fusion of spatial and spectral information using SVM. For this purpose, we propose a methodology allowing to combine these two information. The SVM classification was conducted using a combination of multi-spectral features and Haralick texture features as data source. We have used homogeneity, contrast, correlation, entropy and local homogeneity, which were the best texture features to improve the
classification algorithm. Two kernels have been considered, the RBF kernel based on Euclidean minimum distance (EMD) and a RBF kernel based on the Spectral Angle Mapper (SAM). The proposed approach was tested on common scenes of urban imagery. Results showed, especially with the use of Haralick texture features, that SVMs using RBF kernel based on EMD outperform the SVMs with RBF kernel based on SAM in term of the global accuracy and Kappa coefficient. The experimental results indicate a mean accuracy value of 93.406% for EMD kernel and 92.896% for SAM kernel which is very promising.

References

Spectral and Spatial Classification of High Resolution Urban Satellites Images using Haralick features and SVM with SAM and EMD distance Metrics


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Index Terms

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Keywords

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