Abstract

In this article, machine learning based land usage analysis has been investigated. The objective is twofold: Firstly, the analysis and usage of simple pixel based features from the more complex Hyper Spectral images to land cover recognition. Secondly, an investigation into the parametric and non-parametric machine learning algorithms for the pixel based land cover analysis. For an experimental evaluation, we use the SPOT-5 satellite imagery having resolution of 2.5m. From the machine learning set, we select Support Vector Machine (SVM), Maximum Likelihood Estimator (MLE) and Artificial Neural Network (ANN). These algorithms are selected based on their superior performance in pattern recognition tasks. We distribute the feature space in seven classes i.e. Roads, Settled Areas, Tobacco, Sparse Vegetation, Sugar Cane, Barren Land and water. From the extensive experimentation, and in the current setup, it is concluded that SVM is best suited to the land cover analysis.
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Index Terms

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Keywords

SVM, MLE, ANN, remote sensing, land cover classification, SPOT-5