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A DETAILED STUDY OF CLASSIFIERS IN MULTI-SPECTRAL PATTERN RECOGNITION AND THEIR OPTIMIZATION

Abstract

Technologies in Remote Sensing across various space faring nations are concerned with collecting and analyzing many hundreds of emitted, reflected and back scattered energy bands from regions on the surface of the earth. This imagery is processed using multispectral classifiers that are intelligent machines that process faster than plain human interpretations and prove to be far more accurate.

Multispectral imaging has thus been a subject of interest for many researchers in space science and a substantial amount of development has been noticed in the last two decades. Classification methods developed so far have been centered on both supervised and unsupervised logic. Hybrid logic has been utilized to some extent as well. Sometimes, algorithms based on parametric and nonparametric statistics that use ratio-and interval-scaled data and nonmetric algorithms that can also incorporate nominal scale data have been used. Classifiers have also been developed based on the creation of fuzzy category membership functions with an aim to convert objectively measurable parameters into subjective category memberships and subsequently use them for classification.

In this study we compare the various classifiers employed in the field so far. We analyze the classification algorithms for their efficiency and accuracy. We hope to orient the study thus conducted towards the development of ways to optimize the functioning of the classifiers. This paper also aims to comprehend Multispectral Imaging Using Linear Arrays as employed in Indian Remote Sensing System (IRS).