PaSCoR Advisory Board Meeting 2000

University of Puerto Rico at Mayagüez
PaSCoR students with their poster

Detecting Patterns in Hyperspectral Data by means of Unsupervised Algorithms and Band Selection

Goals

The success of any automated detection depends on the measurement of suitable features of the spectral information. The objective of this research is to develop a new decision-based unsupervised classification technique to identify patterns in hyperspectral data. This technique will be based on the selection of relevant bands and the integration of spatial and spectral information.

Significance

Unsupervised classification algorithms are being developed to uncover patterns in this complex data. These algorithms, when combined with Physics-Based modeling, can allow us to extract hidden features embedded in high-dimensional data. This approach can be used for the identification of unknown species, possible targets etc. among other applications.

Technical Approach

The band selection and unsupervised classification algorithms are being used to select relevant bands and identify patterns in the data. The selected bands are used as inputs to the unsupervised classification algorithm. The resulting clusters are then analyzed to identify the presence of specific patterns. The integration of spatial and spectral information will allow for a more accurate identification of unknown species and targets.

Current Status

Different methods have been explored to evaluate the data. The use of third and second order statistics has shown some preliminary results. Further refinement of the algorithm will be necessary to improve the accuracy of the results.

References


PI Contact Information

[Name], [Title]
[Email]
[Phone]
Dr. Johannes Schellekens with his group of students