

Hyperspectral Eyeing of Heavenly Bodies – a Machine Intelligence Approach

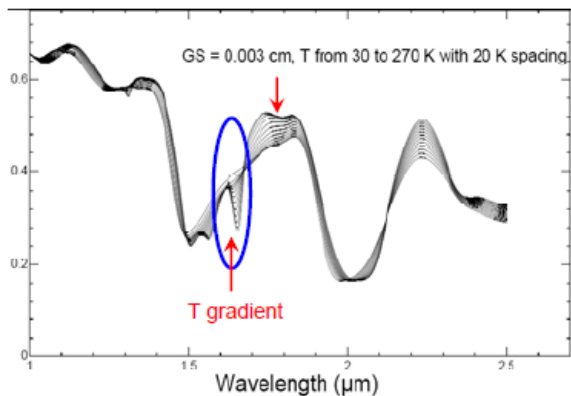
Erzsebet Merenyi

Research Professor

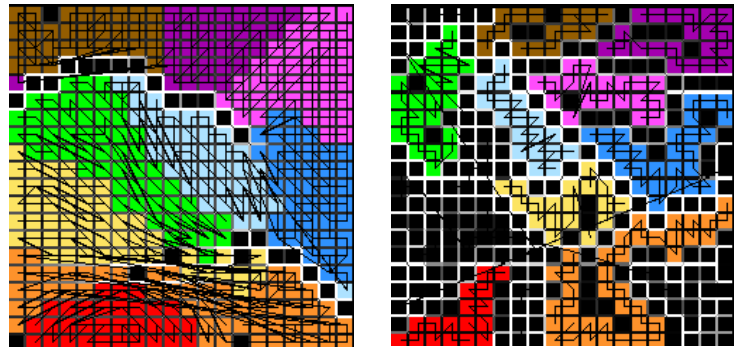
Department of Electrical and Computer Engineering

Rice University, Houston, Texas

Spectra of planetary ices



SOM portraits of temperature and grain size influence on spectra



Hyperspectral imaging provides powerful data for remote sensing scientific inquiries. At the same time, the high spectral dimensionality, the complex relationships among the spectral features, and the large number of material classes expected to be distinguished from these data, pose great challenges for information extraction methods. I will present results from terrestrial and planetary astronomy studies in which significant new knowledge was produced through clustering and classification of hyperspectral data with self-organizing neural machine learning. I will summarize the salient aspects of this paradigm – the focus of our research – which mimics the information processing of biological neural maps observed in the cerebral cortex, and enables to look at, and extract information from, large amounts of high-dimensional, complex data in ways traditional algorithms may not facilitate. I will also present capabilities on synthetic hyperspectral imagery from RIT, which takes algorithm validation to a whole new level.

4 pm, Wed., November 4, 2009

Auditorium of the Center for Imaging Science

www.cis.rut.edu/seminar

for up-to-date seminar schedules, video archives, and abstracts.