Bayesian Techniques for Multi/Hyperspectral Image Processing

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Abstract

In this presentation, I will give a brief overview of different multi - and hyperspectral image processing techniques that are being developed in our lab. The techniques are all based on Bayesian principles, in which prior image information is introduced in the process in the shape of a statistical model of the image probability density function. We apply multivariate models that account for the correlation between the image bands. In many cases, it is advantageous to work in the wavelet domain, because of its spatial decorrelation properties. In that case, heavy-tailed multivariate priors are shown to be advantageous. Techniques are presented in the domains of multi - and hyperspectral image restoration, fusion, segmentation, retrieval and classification. The techniques are demonstrated on remote sensing applications.

Biography

Paul Scheunders graduated in physics at the University of Antwerp in 1986, and obtained a PhD. in Physics at the same university in 1990, with work in the field of statistical mechanics. After 2 years of research at the University and the University Hospital in Leuven, Belgium, he became a research associate at the Vision Lab of the department of Physics of the University of Antwerp, where he became a professor in 2000. He has published about 150 papers in international journals and proceedings in the field of image processing and pattern recognition. His main research interest includes wavelets, multispectral image processing and remote sensing.