

SPEAKER: Dr. Christophe Collet, Strasbourg University

Title : New ways for Multicomponent Image Analysis

Abstract : My talk deals with multicomponent image analysis. I will present innovating methods to carry out the analysis, the segmentation, the classification, the detection of multicomponent data. These methods are based on Bayesian inference, Markov models (Markov field, Markov chain, Markov tree) and have to take into account multidimensional non-gaussian noise (copulas theory). The data are then modeled within a probabilistic framework, thus enabling us to integrate multiple sources and modalities, possibly multi- or hyperspectral depending on the sensor type. Bayesian inference is used to estimate the quantities of interest as well as their uncertainties, thus allowing for accurate data analysis, model checking and assessment in an unsupervised way. Results in different applicative contexts (Multispectral and hyperspectral imaging in astronomy, polarimetric imaging (remote sensing), Multimodal imaging (medical imaging, biology)) will be shown.

Short Bio :[Christophe Collet](#) was born in 1966 in France. He graduated from the Université Paris-Sud Orsay in 1989 (Master in Signal Processing, DEA) and received a Ph.D. in Image Processing from the University of Toulon in 1992. He spent 8 years at the French Naval Academy and was the chairman of the laboratory GTS “Groupe de Traitement du Signal” from 1994 to 2000, where he developed hierarchical Markovian approaches for SONAR image analysis. Since 2001 he holds a Full Professor position at Strasbourg University (LSIIT UMR CNRS 7005) and lead [PASEO team](#). His major research interests include multi-image segmentation and classification with hierarchical approaches (wavelet decomposition, multigrid optimization, multiscale modeling), Bayesian inference, Markovian approaches for pattern recognition, Bayesian networks, with a particular focus on astronomy (hyperspectral) and medical (multimodal) images.