

The **Working Group on Risk - CREAR**, with the support of the IDS dpt, Institut des Actuaire, LabEx MME-DII, and the group BFA (SFdS), has the pleasure to invite you to the seminar by:

Prof. Yannis Yatracos

Cyprus Univ. of Technology

**“Detecting clusters in the data
from variance decompositions of its projections”**

*at ESSEC La Défense (CNIT) - Amphi 202, 12:30-1:30pm
and ESSEC Asia Pacific - Level 3, classroom 7, 6:30-7:30pm*

A new Projection-Pursuit Index, J , is used to identify clusters and other structures in multivariate data. Index J is obtained from an unusual variance decomposition of the data's one-dimensional projections, without assuming a model for the data or that the number of clusters is known. The Index is affine invariant and successful with real and simulated data. A general result is obtained indicating that clusters' separation increases with the data's dimension. In simulations it is thus confirmed, as expected, that the performance of the index either improves or does not deteriorate when the data's dimension increases, making it especially useful for “large dimension-small sample size” data, unlike other cluster detection methods. The efficiency of Index J will increase with the continuously improved computer technology and by providing additional projection directions, suitable for specific distributional assumptions. Applications and open problems are presented.

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Labex MME-DII
Modèles Mathématiques et Économiques de la
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Prof. Yannis Yatracos

Cyprus Univ. of Technology

Yannis Yatracos obtained his Ph.D. from UC Berkeley under Lucien Le Cam. He is currently with Cyprus University of Technology. Previous regular appointments include Rutgers, Columbia, UCSB, University of Montreal and the National University of Singapore (NUS). He was also elected Professor at the University of Marseille, at Luminy. Yannis started his research in density estimation, with calculation of rates of convergence via Minimum Distance methods. He extended these results in non-parametric regression and continued his research in other areas of Statistics and in Actuarial Science. Yannis investigated in particular pathologies of plug-in-methods, like the bootstrap and the MLE. His current recent interests include deconvolution in \mathbb{R}^d ($d > 1$), cluster detection for high dimensional data and option pricing without stochastic calculus, via Le Cam's Statistical Experiments. Yannis is Elected IMS and ASA Fellow, Elected ISI member and Associate member of the Society of Actuaries (U.S.A.). He also received a meritorious teaching award from the Faculty of Science, NUS.

