

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. Anne SABOURIN

LTCI, Télécom ParisTech, Univ. Paris-Saclay

Tuesday, November 27, 2018, 12:30pm – 1:30pm

EEE - ESSEC La Défense (CNIT) – Amphi 202

“Binary classification in Extreme regions”

In a wide variety of applications involving anomaly detection (e.g. buzzes in social network data, frauds, system failures), extreme observations play a key role because anomalies often correspond to large observations. The key issue is then to distinguish between large observation from the normal class and large observations from the anomaly class. This task can thus be formulated as a binary classification problem in extreme regions. However, extreme observations generally contribute in a negligible manner to the (empirical) error, simply because of their rarity. As a consequence, empirical risk minimizers generally perform very poorly in extreme regions. This paper develops a general framework for classification of extreme values. Precisely, under non-parametric heavy-tail assumptions, we propose a natural and asymptotic notion of risk accounting for predictive performance in extreme regions. We prove that minimizers of an empirical version of this dedicated risk lead to classification rules with good generalization capacity, by means of maximal deviation inequalities in low probability regions. Numerical experiments illustrate the relevance of the approach developed.

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Dr. Anne Sabourin is Maître de conférences in the S2A group at Telecom ParisTech since 2013. Her research interests concern multivariate extreme value theory, dependence between rare events, dimension reduction in extreme regions, with various applications ranging from environmental risk to machine learning applications such as anomaly detection. Anne holds a PhD in Applied Mathematics (on multivariate extreme values and Bayesian inference) from Univ. Lyon 1. (Website: <https://perso.telecom-paristech.fr/sabourin/index.html>)



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