



Statistics and Actuarial Science Seminar

Title: Robust estimation with MMD

Speaker: Pierre Alquier (ESSEC Asia-Pacific)

Date: Thu 30th November 2023 at 3:00PM

Location: E0.32 (beside Pi restaurant)

Abstract: Maximum likelihood estimation (MLE) enjoys strong optimality properties for statistical estimation, under strong assumptions. However, when these assumptions are not satisfied, MLE can be extremely unreliable. In this talk, we will explore alternative estimators based on the minimization of well chosen distances. In particular, we will see that the Maximum Mean Discrepancy (MMD) leads to estimation procedures that are consistent without any assumption on the model nor on the data-generating process. This might look like a mathematical curiosity, but it turns out this leads to very strong robustness properties. In practice, this method was already used in quite complex models with promising results.

I will introduce estimation with MMD-minimization and its basic theory. I will also present a few applications: estimation of copulas, data compression, generative models in AI, etc. I will also discuss the current algorithms to minimize the MMD, and important challenges.

This is based on joint works with: Badr-Eddine Chérif-Abdellatif (CNRS, Paris), Mathieu Gerber (University of Bristol), Daniele Durante (Bocconi University), Sirio

Legramanti (University of Bergamo), Jean-David Fermanian (ENSAE Paris), Alexis Derumigny (TU Delft), Geoffrey Wolfer (RIKEN-AIP, Tokyo).