

AGCO Seminar

2018-14-11:

Author: Nishant Mehta, University of Victoria.

Where: Republica 701, Sala 33.

When: Wednesday, November 14, 14:30.

Title: Fast Rates for Unbounded Losses: from ERM to Generalized Bayes

Abstract: I will present new excess risk bounds for randomized and deterministic estimators, discarding boundedness assumptions to handle general unbounded loss functions like log loss and squared loss under heavy tails. These bounds have a PAC-Bayesian flavor in both derivation and form, and their expression in terms of the information complexity forms a natural connection to generalized Bayesian estimators. The bounds hold with high probability and a fast $\tilde{O}(1/n)$ rate in parametric settings, under the recently introduced central' condition (or various weakenings of this condition with consequently weaker results) and a type of 'empirical witness of badness' condition. The former conditions are related to the Tsybakov margin condition in classification and the Bernstein condition for bounded losses, and they help control the lower tail of the excess loss. The 'witness' condition is new and suitably controls the upper tail of the excess loss. These conditions and our techniques revolve tightly around a pivotal concept, the generalized reversed information projection, which generalizes the reversed information projection of Li and Barron. Along the way, we connect excess risk (a KL divergence in our language) to a generalized Rényi divergence, generalizing previous results connecting Hellinger distance to KL divergence.

This is joint work with Peter Grünwald.