Les mathématiques de l'apprentissage machine
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Concentration properties and examples of functions with weak interactions

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The talk concentrates on the statistical properties of functions with the following property: if n is the number of arguments, then first partial differences decay as $1/n$ and mixed second partial differences decay roughly as $1/n^2$. The random variables obtained by applying such functions to a vector of independent variables allow sharp empirical estimates of expectation, variance and normal approximation. Examples of such functions with weak interactions are U- and V-statistics, Lipschitz L-statistics and various error functionals of l_2-regularized algorithms and Gibbs algorithms.

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