



Department of Decision Sciences

Statistics Seminars

Kernel estimation of Sobol' indices from a single sample

Clementine Prieur

(Universite Grenoble Alpes)

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Abstract

Many mathematical models use a large number of poorly-known parameters as inputs. Sensitivity analysis aims at quantifying the influence of each of these parameters (or of each subset of these parameters) on specific quantities of interest. More generally it helps in understanding model behavior, characterizing uncertainty, improving model calibration, etc. In this talk I will focus on Global Sensitivity Analysis which is based on the modeling of input uncertain parameters by a probability distribution. There exist various sensitivity measures built within this paradigm. I will focus on variance-based sensitivity measures, more specifically on the estimation of Sobol' indices. The new estimator we introduce, in the framework of independent inputs, is a kernel-based estimator, built from a single input-output sample. I will present the asymptotic properties of this estimator. Also, first numerical results on test cases will be presented.