

Department of Decision Sciences - Bocconi University
Via Roentgen 1 - 20136 Milano
Tel. 02-58365632 - Fax 02-58365630

SEMINAR

“Postulating monotonicity in Bayesian nonparametric regression”

Elja Arjas
(University of Helsinki)

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Abstract:

It is often reasonable, by using earlier empirical evidence or theoretical understanding of the considered applied context, to assume that the regression surface corresponding to a response variable, as a function of the model covariates, is either monotonically increasing or monotonically decreasing, but then otherwise leave the form of such a function unspecified. In this talk we consider the practical implications of making such a postulate when applying variable dimensional Bayesian modeling, MCMC, and model averaging. The method makes efficient use of the simple geometrical structure of piecewise constant functions, based on “upper corner sets” and the natural partial ordering in the space spanned by the model covariates. These functions can then be directly linked to a suitably defined likelihood. The method is illustrated by applying it to simulated and real data.

The talk is based on joint work with Olli Saarela.