ID de Contribution: **32**   Type: **Non spécifié**

Gaussian processes with inequality constraints: Theory and computation

mercredi 19 juin 2024 16:30 (1 heure)

In Gaussian process modeling, inequality constraints enable to take expert knowledge into account and thus to improve prediction and uncertainty quantification. Typical examples are when a black-box function is bounded or monotonic with respect to some of its input variables. We will show how inequality constraints impact the Gaussian process model, the computation of its posterior distribution and the estimation of its covariance parameters. An example will be presented, where a numerical flooding model is monotonic with respect to two input variables called tide and surge.

The talk will follow 3 parts. (1) An introduction to (constrained) Gaussian processes and their motivations in the field of computer experiments will be provided. (2) Theoretical results on the impact of the constraints on maximum likelihood estimation will be provided. (3) Focusing on numerical computations, an algorithm called MaxMod will be presented.

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Classification de Session: Exposé long