



Joint MUMS Program Transition - SPUQ Workshop
May 14-17, 2019
SPEAKER/ABSTRACT

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“Model Selection in the Context of Computer Models”

Abstract:

We approach the screening problem - i.e. detecting which inputs of a computer model significantly impact the output - from a formal Bayesian model selection point of view. That is, we place a Gaussian process prior on the computer model and consider the 2^p models that result from assuming that each of the subsets of the p inputs affect the response. The goal is to obtain the posterior probabilities of each of these models. In this talk, we focus on the specification of objective priors on the model-specific parameters and on convenient ways to compute the associated marginal likelihoods. These two problems that normally are seen as unrelated, have challenging connections since the priors proposed in the literature are specifically designed to have posterior modes in the boundary of the parameter space, hence precluding the application of approximate integration techniques based on e.g. Laplace approximations. We explore several ways of circumventing this difficulty, comparing different methodologies with synthetic examples taken from the literature.

Joint work with Gonzalo Garcia-Donato (Universidad de Castilla-La Mancha)