Morris screening combined with Gaussian process-based joint metamodels for the sensitivity analysis of simulation codes

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We propose to combine a screening method with a joint metamodeling to perform the sensitivity analysis of computer codes involving a large number of uncertain inputs. First, a Morris screening [1] is performed. From this, the inputs are split into two groups: the influential (Gp1) and the negligible ones (Gp2). Then, a Gaussian process-based joint metamode [2]l is used to fit the mean and the heteroscedastic variance of the output against the Gp1 variables. The Sobol sensitivity indices of each Gp1 variable and the total effect of Gp2 are estimated to provide quantitative information and confirm the relevance of Morris graph interpretation.

Références

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