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# An inference method for global sensitivity analysis

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## Résumé

Although there is a plethora of methods to estimate sensitivity indices associated with individual inputs, there is much less work on interaction effects of every order, especially when it comes to make inferences about the true underlying values of the indices. To fill this gap, a method that allows one to make such inferences simultaneously from a single Monte Carlo sample is given. One advantage of this method is its simplicity: one leverages the fact that Shapley and Sobol indices are only linear transformations of total indices, so that standard asymptotic theory suffices to get confidence intervals, p-values, and the possibility of carrying out statistical tests. To do the numerical computations, Möbius inversion formulas are used and linked to the fast Möbius transform algorithm. An illustration on a model in cellular biology involving 12 inputs and 4096 input combinations and interaction effects is given. This is joint work with Laurent Tournier.

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