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Sensitivity Analysis: What is in the Model Black Box?

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Sensitivity analysis is essential in understanding the behavior of a model, being it a model fitted to data or a simulator. In this work, we review recent advances in the field, showing that a variety of information can be extracted from a given Monte Carlo Sample. A variety of methods and possibilities will be explored. We will consider the estimation of variance-based and moment-independent sensitivity measures to gain insights on key-drivers of uncertainty. We will consider estimation of partial dependence functions and conditional regression lines to gain indications about trend. Specific considerations will be given to the case in which simulator inputs are correlated.