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Nota di contenuto	Global Sensitivity Analysis. The Primer; Contents; Preface; 1 Introduction to Sensitivity Analysis; 1.1 Models and Sensitivity Analysis; 1.1.1 Definition; 1.1.2 Models; 1.1.3 Models and Uncertainty; 1.1.4 How to Set Up Uncertainty and Sensitivity Analyses; 1.1.5 Implications for Model Quality; 1.2 Methods and Settings for Sensitivity Analysis - an Introduction; 1.2.1 Local versus Global; 1.2.2 A Test Model; 1.2.3 Scatterplots versus Derivatives; 1.2.4 Sigma-normalized Derivatives; 1.2.5 Monte Carlo and Linear Regression; 1.2.6 Conditional Variances - First Path 1.2.7 Conditional Variances - Second Path1.2.8 Application to Model (1.3); 1.2.9 A First Setting: 'Factor Prioritization'; 1.2.10 Nonadditive Models; 1.2.11 Higher-order Sensitivity Indices; 1.2.12 Total Effects; 1.2.13 A Second Setting: 'Factor Fixing'; 1.2.14 Rationale for Sensitivity Analysis; 1.2.15 Treating Sets; 1.2.16 Further Methods; 1.2.17 Elementary Effect Test; 1.2.18 Monte Carlo Filtering; 1.3

Nonindependent Input Factors; 1.4 Possible Pitfalls for a Sensitivity Analysis; 1.5 Concluding Remarks; 1.6 Exercises; 1.7 Answers; 1.8 Additional Exercises

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6.1 Example 1: A Composite Indicator

Sommario/riassunto

Complex mathematical and computational models are used in all areas of society and technology and yet model based science is increasingly contested or refuted, especially when models are applied to controversial themes in domains such as health, the environment or the economy. More stringent standards of proofs are demanded from model-based numbers, especially when these numbers represent potential financial losses, threats to human health or the state of the environment. Quantitative sensitivity analysis is generally agreed to be one such standard. Mathematical models are good at mapping as