1.	Record Nr.	UNINA9910558496703321
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	Titolo	Algorithmic Decision Making with Python Resources : From Multicriteria Performance Records to Decision Algorithms via Bipolar-Valued Outranking Digraphs / / by Raymond Bisdorff
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2022
	ISBN	9783030909284 9783030909277
	Edizione	[1st ed. 2022.]
	Descrizione fisica	1 online resource (366 pages)
	Collana	International Series in Operations Research & Management Science, , 2214-7934 ; ; 324
	Disciplina	005.133 658.4033
	Soggetti	Operations research Graph theory Computer science - Mathematics Mathematical statistics - Data processing Operations Research and Decision Theory Graph Theory Mathematical Applications in Computer Science Statistics and Computing
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di contenuto	Part I: Introduction to the DIGRAPH3 Python Resources -- 1. Working with the DIGRAPH3 Python Resources -- 2. Working with Bipolar-Valued Digraphs -- 3. Working with Outranking Digraphs -- Part II: Evaluation Models and Decision Algorithms -- 4. Building a Best Choice Recommendation -- 5. How to Create a New Multiple-Criteria Performance Tableau -- 6. Generating Random Performance Tableaux -- 7. Who Wins the Election? -- 8. Ranking with Multiple Incommensurable Criteria -- 9. Rating by Sorting into Relative Performance Quantiles -- 10. Rating-by-Ranking with Learned Performance Quantile Norms -- 11. HPC Ranking of Big Performance Tableaux -- Part III: Evaluation and Decision Case Studies -- 12. Alice's

Sommario/riassunto

This book describes Python3 programming resources for implementing decision aiding algorithms in the context of a bipolar-valued outranking approach. These computing resources, made available under the name Digraph3, are useful in the field of Algorithmic Decision Theory and more specifically in outranking-based Multiple-Criteria Decision Aiding (MCDA). The first part of the book presents a set of tutorials introducing the Digraph3 collection of Python3 modules and its main objects, such as bipolar-valued digraphs and outranking digraphs. In eight methodological chapters, the second part illustrates multiple-criteria evaluation models and decision algorithms. These chapters are largely problem-oriented and demonstrate how to edit a new multiple-criteria performance tableau, how to build a best choice recommendation, how to compute the winner of an election and how to make rankings or ratings using incommensurable criteria. The book's third part presents threereal-world decision case studies, while the fourth part addresses more advanced topics, such as computing ordinal correlations between bipolar-valued outranking digraphs, computing kernels in bipolar-valued digraphs, testing for confidence or stability of outranking statements when facing uncertain or solely ordinal criteria significance weights, and tempering plurality tyranny effects in social choice problems. The fifth and last part is more specifically focused on working with undirected graphs, tree graphs and forests. The closing chapter explores comparability, split, interval and permutation graphs. The book is primarily intended for graduate students in management sciences, computational statistics and operations research. The chapters presenting algorithms for ranking multicriteria performance records will be of computational interest for designers of web recommender systems. Similarly, the relative and absolute quantile-rating algorithms, discussed and illustrated in several chapters, will be of practical interest to public and private performance auditors.