Book Reviews / Reseñas

REDUCTION, APPROXIMATION, MACHINE LEARNING, SURROGATES, EMULATORS AND SIMULATORS .RAMSES.

Editors Gianluigi Rozza, Giovanni Stabile, Max Gunzburger and Marta D'Elia (2024)

This book embodies principles main contents may be characterized by the presentation of a broad set of recent advances in algorithmic and mathematics which are identified as Mathematical Model Approximations, Reduced Order Models, Approximation Theory, Machine Learning, Surrogates, Emulators and Simulators. It is intended to be of use by researchers and scholars.

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VARIATIONAL AND DIFFUSION PROBLEMS IN RANDOM WALK SPACES

José M. Mazón, Marcos Solera-Diana, J. Julián Toledo-Melero (2023)

The book is formed by the following chapters: The Heat Flow in Random Walk Spaces , The Total Variation Flow in Random Walk Spaces , ROF-Models in Random Walk Spaces , Least Gradient Functions in Random Walk Spaces ,Doubly Nonlinear Nonlocal Stationary Problems of Leray-Lions Type with Nonlinear Boundary Conditions ,Doubly Nonlinear Nonlocal Diffusion Problems of Leray-Lions Type with Nonlinear Boundary Conditions . It provides a remarkable discussion on the state-of-the-art on the interface of Analysis, Geometry, and Probability. The latest results on the theory of gradient flowing in random walk spaces are also presented. So it conveys to have a unified presentation of   a   variety of partial differential equations on nonlocal models, and weighted graphs, as well as on partial differential equations on nonlocal models and weighted graphs. The authors developed important arguments on the theory, sustaining the flowing of specific gradient flows (heat flow, the total variational flow) , on the   Leray-Lions type boundary conditions.

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LOGIC-BASED BENDERS DECOMPOSITION. SUBTITLETHEORY AND APPLICATIONS

John Hooker (2024).

The book Introduces logic-based Benders decomposition (LBBD) for optimization, generalizing the classical Benders method. It is remarkable how the author exposed relevant concepts, as inference duality, branch-and-check methods, and application to two-stage stochastic and robust optimization models. The interface of LBBD with stochastic and robust optimization, heuristic methods, and decision diagrams is presented with gaiety . To my knowledge, the book is the first comprehensive guide to logic-based Benders decomposition (LBBD). The readers will obtain the needed theoretical with concept on large-complex optimization problems. As is well known, LNBD permits decomposing big problems into small components, simplifying the obtention of practical solutions. Therefore the researcher may reduce the solution times by orders of magnitude, and combining them with stochastic and robust optimization, heuristic methods, and decision diagrams.

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THE PROBABILISTIC SIR MODEL (PSIR) IN THE PANDEMIC PROCESS . PROJECT MANAGEMENT IN PREVENTION AND SUPPORT.

Marcus Hellwig (2023)
Springer Vieweg Cham. XII, 77.

The book contains12 chapters. It is concerned with presents insights experienced during the COVID process. The need of developing preventive infection management needs of the statistical-probabilistic model PSIR. Its introduction in epidemiological studies is playing an important role in modeling preventive management of resources and infrastructure as the pandemic generates "waves ahead of the wave". It is of interest for professionals and advanced students of Applied Statistics, Public Health and related researchers.

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