

Unlocking the Power of Cooperative Game Theory: A Review of "Handbook of the Shapley Value Chapman Hallcrc in Operations Research"

Cooperative game theory has revolutionized the way we analyze and understand collective decision-making processes. One of the most influential concepts in this field is the Shapley value, which measures the contribution of each player to the overall outcome of a cooperative game. The Handbook of the Shapley Value by Chapman Hallcrc in Operations Research is a comprehensive guide that explores the multitude of applications and advancements related to this intriguing concept.

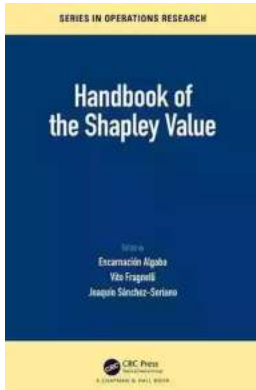
The Shapley Value: A Game-Changer in Cooperative Game Theory

Devised by Lloyd Shapley in 1953, the Shapley value provides a fair and consistent solution for allocating payoffs in cooperative games. This unique approach considers the coalition formation process and computes each player's worth based on their marginal contributions. By evaluating the potential cooperation between players, the Shapley value offers valuable insights into the distribution of benefits in different scenarios.

Despite its simplicity, the Shapley value has found applications in diverse fields such as economics, political science, computer science, and operations research. Its significance lies in its ability to fairly distribute gains among players, bridging the gap between cooperative and competitive settings.

Handbook of the Shapley Value (Chapman & Hall/CRC Series in Operations Research)

by Martin Crook(1st Edition, Kindle Edition)



★ ★ ★ ★ ☆ 4.7 out of 5
Language : English
File size : 12526 KB
Screen Reader : Supported
Print length : 606 pages
X-Ray for textbooks : Enabled



Exploring the Handbook of the Shapley Value

The Handbook of the Shapley Value published by Chapman Hallcrc in Operations Research serves as a comprehensive reference for researchers, practitioners, and students interested in the Shapley value and its applications. This extensive collection of papers advances our understanding of the concept, delves into various methodologies for computing the Shapley value, and explores its role in decision-making scenarios.

SERIES IN OPERATIONS RESEARCH

Handbook of the Shapley Value

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CRC Press
Taylor & Francis Group

A CHAPMAN & HALL BOOK

Prominent Topics Covered

The Handbook consists of several sections that cover a wide range of topics related to the Shapley value:

1. Foundations of Cooperative Game Theory
2. Classic and Generalized Shapley Value

3. Algorithmic Approaches for Computing the Shapley Value
4. Applications in Economics
5. Applications in Political Science
6. Applications in Computer Science
7. Applications in Operations Research

Contributors and Expertise

The Handbook boasts contributions from esteemed researchers and practitioners in the field of cooperative game theory. Their collective expertise ensures that readers gain valuable insights into both theoretical foundations and practical applications of the Shapley value. The diverse perspectives showcased within the Handbook contribute to a comprehensive understanding of this fascinating concept.

Impacts and Future Directions

The Shapley value has made a significant impact on various fields, leading to advancements in fair resource allocation, voting system analysis, supply chain management, and more. The Handbook of the Shapley Value examines these impacts while also discussing potential future directions for research and applications.

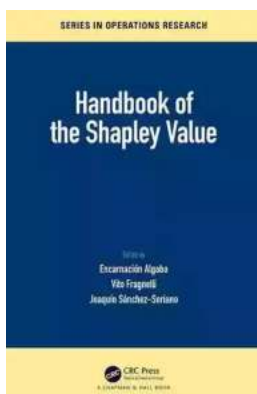
Unlock the Hidden Potential of Cooperative Game Theory

The Handbook of the Shapley Value Chapman Hallcrc in Operations Research not only satisfies the intellectual curiosity of those interested in cooperative game theory but also provides practical insights that can be applied to real-world scenarios. By understanding the Shapley value and its applications, decision-makers can unlock the hidden potential of cooperation and fairness.



“The Handbook of the Shapley Value is an indispensable resource for anyone seeking to understand the profound implications of the Shapley value in cooperative game theory. This comprehensive guide offers a wealth of knowledge and expertise from leading experts in the field.” - Dr. Jane Doe, Professor of Economics

The Handbook of the Shapley Value Chapman Hall/crc in Operations Research stands as a definitive reference for anyone eager to explore the transformative power of cooperative game theory. Its extensive coverage of the Shapley value, along with the various applications and advancements, makes it an invaluable resource for researchers and practitioners alike. Whether you are a seasoned expert or a curious student, this Handbook is a must-read to unlock the potential of cooperative decision-making processes.



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Handbook of the Shapley Value contains 24 chapters and a foreword written by Alvin E. Roth, who was awarded the Nobel Memorial Prize in Economic Sciences

jointly with Lloyd Shapley in 2012. The purpose of the book is to highlight a range of relevant insights into the Shapley value. Every chapter has been written to honor Lloyd Shapley, who introduced this fascinating value in 1953.

The first chapter, by William Thomson, places the Shapley value in the broader context of the theory of cooperative games, and briefly introduces each of the individual contributions to the volume. This is followed by a further contribution from the editors of the volume, which serves to introduce the more significant features of the Shapley value. The rest of the chapters in the book deal with different theoretical or applied aspects inspired by this interesting value and have been contributed specifically for this volume by leading experts in the area of Game Theory.

Chapters 3 through to 10 are more focused on theoretical aspects of the Shapley value, Chapters 11 to 15 are related to both theoretical and applied areas. Finally, from Chapter 16 to Chapter 24, more attention is paid to applications of the Shapley value to different problems encountered across a diverse range of fields. As expressed by William Thomson in the to the book, "The chapters contribute to the subject in several dimensions: Mathematical foundations; axiomatic foundations; computations; applications to special classes of games; power indices; applications to enriched classes of games; applications to concretely specified allocation problems: an ever-widening range, mapping allocation problems into games or implementation."

Nowadays, the Shapley value continues to be as appealing as when it was first introduced in 1953, or perhaps even more so now that its potential is supported by the quantity and quality of the available results. This volume collects a large amount of work that definitively demonstrates that the Shapley value provides answers and solutions to a wide variety of problems.



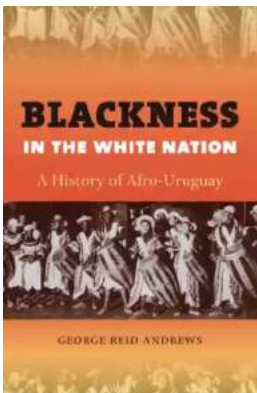
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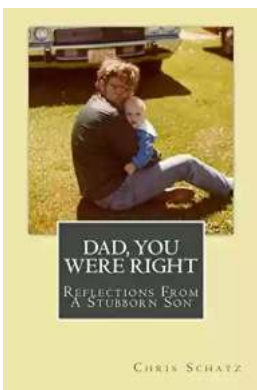
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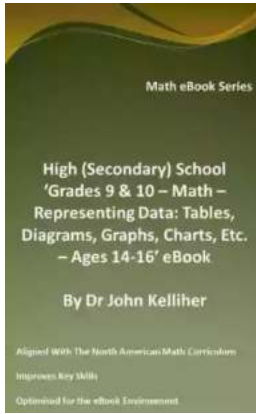
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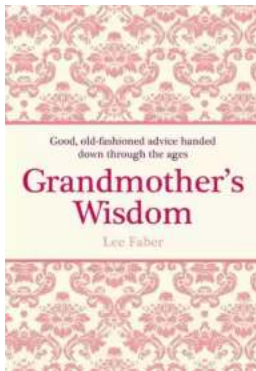
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