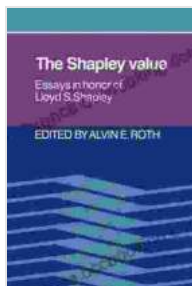


Essays in Honor of Lloyd Shapley: A Gateway to Game Theory and Cooperation



The Shapley Value: Essays in Honor of Lloyd S.

Shapley by Alvin E. Roth

★★★★★ 5 out of 5

Language : English
File size : 9706 KB
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Essays in Honor of Lloyd Shapley is a comprehensive and authoritative collection of essays that pays tribute to the pioneering work of Nobel laureate Lloyd Shapley, a towering figure in the field of game theory. This volume brings together a diverse group of leading scholars and practitioners who have been deeply influenced by Shapley's groundbreaking contributions.

Through a series of insightful essays, **Essays in Honor of Lloyd Shapley** provides a comprehensive overview of Shapley's seminal work in cooperative game theory, matching algorithms, fair division, and market design. The essays delve into the theoretical underpinnings of these concepts, showcase their practical applications, and highlight their profound impact on a wide range of disciplines, including economics, political science, computer science, and operations research.

This book is not only a fitting tribute to Shapley's extraordinary contributions but also an invaluable resource for anyone seeking a deeper understanding of game theory and its vielfältig applications. Whether you are a seasoned researcher, a student, or a practitioner, **Essays in Honor of Lloyd Shapley** offers a wealth of insights and inspiration.

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Chapter 1: Lloyd Shapley and the Birth of Cooperative Game Theory

This chapter provides a comprehensive overview of Lloyd Shapley's life and work, highlighting his pivotal role in the development of cooperative game theory.

The chapter begins by discussing Shapley's early life and education, tracing the formative influences that shaped his intellectual development. It then examines his groundbreaking work on the Shapley value, a fundamental concept in cooperative game theory that measures the power and influence of players in a game.

The chapter concludes by exploring Shapley's wider contributions to cooperative game theory, including his work on bargaining solutions, coalition formation, and social choice theory.

Chapter 2: The Shapley Value: A Measure of Power and Influence

This chapter delves into the theoretical underpinnings and practical applications of the Shapley value.

The chapter begins by providing a rigorous mathematical definition of the Shapley value and discussing its key properties. It then explores the use of the Shapley value in a wide range of applications, including voting systems, cost allocation, and fair division.

The chapter concludes by examining the strengths and limitations of the Shapley value and discussing its ongoing relevance in game theory and beyond.

Chapter 3: Matching Algorithms: From Hospitals to Marriages

This chapter explores the exciting world of matching algorithms, a fundamental tool for solving allocation problems in various domains.

The chapter begins by introducing the basic concepts of matching theory and discussing the key challenges involved in designing efficient and fair matching algorithms. It then delves into specific matching algorithms, such as the deferred acceptance algorithm and the Gale-Shapley algorithm, which are widely used in practice.

The chapter concludes by showcasing the vielfältig applications of matching algorithms, including hospital residency allocation, school choice, and kidney exchange.

Chapter 4: Fair Division: Dividing the Spoils Fairly

This chapter tackles the age-old problem of fair division, exploring the theoretical and practical challenges of dividing resources equitably among multiple parties.

The chapter begins by discussing the different notions of fairness and the mathematical tools used to measure and achieve fairness in division problems. It then examines various fair division methods, such as the proportional method, the envy-free method, and the equitable method.

The chapter concludes by exploring the applications of fair division methods in a variety of settings, including estate division, territorial disputes, and resource allocation.

Chapter 5: Market Design: Designing Markets that Work

This chapter ventures into the fascinating field of market design, a discipline that seeks to design markets that are efficient, fair, and transparent.

The chapter begins by discussing the fundamental principles of market design and the challenges involved in designing markets for specific goods and services. It then examines a range of market design mechanisms, such as auctions, exchanges, and matching markets.

The chapter concludes by exploring the practical applications of market design in a variety of settings, including energy markets, telecommunications markets, and financial markets.

Chapter 6: The Legacy of Lloyd Shapley

This concluding chapter reflects on the profound and enduring impact of Lloyd Shapley's work on game theory and its applications.

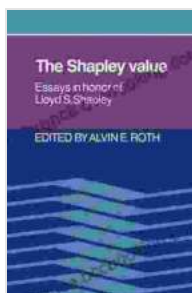
The chapter begins by discussing the major themes and ideas that have emerged from Shapley's research and the ways in which his work has shaped the field of game theory. It then examines the practical impact of Shapley's work on a wide range of real-world problems, from hospital residency allocation to kidney exchange.

The chapter concludes by highlighting the ongoing relevance of Shapley's work and the challenges and opportunities that lie ahead for the field of game theory in the years to come.

Essays in Honor of Lloyd Shapley is a must-read for anyone interested in gaining a deeper understanding of game theory and its vielfältig applications. This volume provides a comprehensive and authoritative overview of Shapley's groundbreaking work, showcasing his profound impact on the field and inspiring future generations of researchers and practitioners.

With its engaging writing style and insightful contributions from leading scholars, **Essays in Honor of Lloyd Shapley** is a valuable resource for both seasoned researchers and students alike. Whether you are a seasoned researcher, a student, or a practitioner, you will find in this book a wealth of insights and inspiration.

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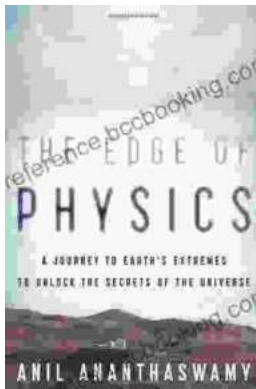
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