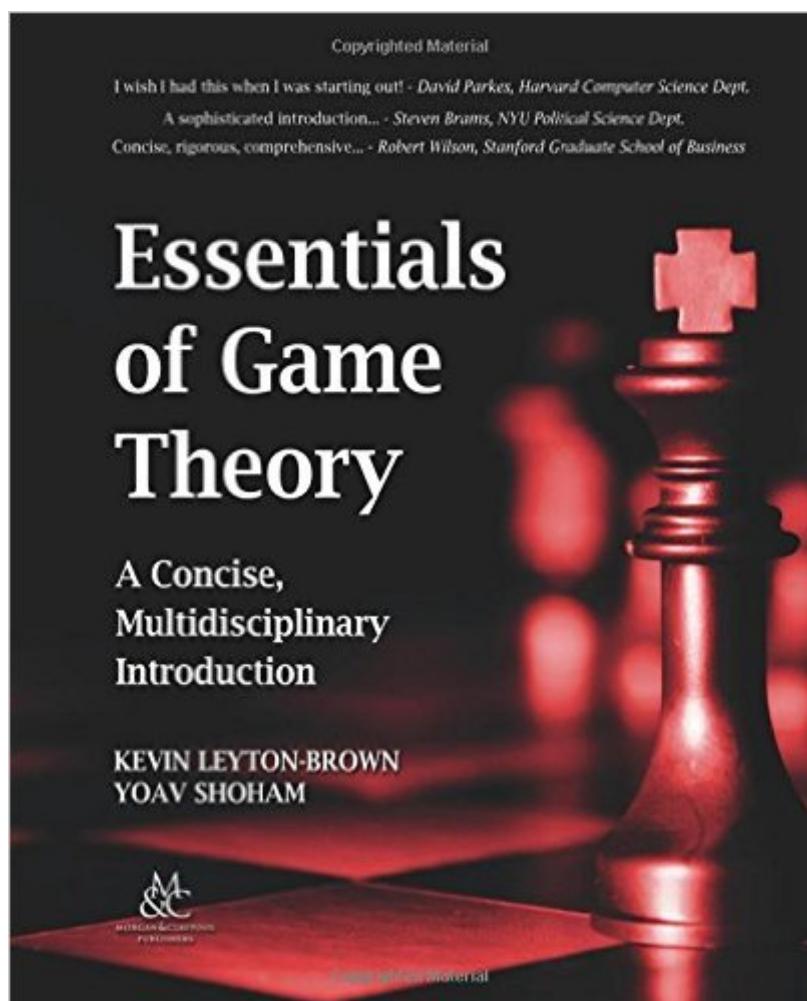


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# Essentials Of Game Theory: A Concise, Multidisciplinary Introduction (Synthesis Lectures On Artificial Intelligence And Machine Learning)



## Synopsis

Game theory is the mathematical study of interaction among independent, self-interested agents. The audience for game theory has grown dramatically in recent years, and now spans disciplines as diverse as political science, biology, psychology, economics, linguistics, sociology, and computer science, among others. What has been missing is a relatively short introduction to the field covering the common basis that anyone with a professional interest in game theory is likely to require. Such a text would minimize notation, ruthlessly focus on essentials, and yet not sacrifice rigor. This Synthesis Lecture aims to fill this gap by providing a concise and accessible introduction to the field. It covers the main classes of games, their representations, and the main concepts used to analyze them.

Table of Contents: Games in Normal Form / Analyzing Games: From Optimality to Equilibrium / Further Solution Concepts for Normal-Form Games / Games with Sequential Actions: The Perfect-information Extensive Form / Generalizing the Extensive Form: Imperfect-Information Games / Repeated and Stochastic Games / Uncertainty about Payoffs: Bayesian Games / Coalitional Game Theory / History and References / Index

"This introduction is just what a growing multidisciplinary audience needs: it is concise, authoritative, up to date, and clear on the important conceptual issues." --Robert Stalnaker, MIT, Linguistics and Philosophy

"I wish I'd had a comprehensive, clear and rigorous introduction to the essentials of game theory in under one hundred pages when I was starting out." --David Parkes, Harvard University, Computer Science

"Beside being concise and rigorous, Essentials of Game Theory is also quite comprehensive. It includes the formulations used in most applications in engineering and the social sciences and illustrates the concepts with relevant examples." --Robert Wilson, Stanford University Graduate School of Business

"Best short introduction to game theory I have seen! I wish it was available when I started being interested in the field!" --Silvio Micali, MIT, Computer Science

"Although written by computer scientists, this book serves as a sophisticated introduction to the main concepts and results of game theory from which other scientists, including social scientists, can greatly benefit. In eighty pages, Essentials of Game Theory formally defines key concepts, illustrated with apt examples, in both cooperative and noncooperative game theory." --Steven Brams, New York University, Political Science

"This book will appeal to readers who do not necessarily hail from economics, and who want a quick grasp of the fascinating field of game theory. The main categories of games are introduced in a lucid way and the relevant concepts are clearly defined, with the underlying intuitions always provided." --Krzysztof Apt, University of Amsterdam, Institute for Logic, Language and Computation

"This unique book is today the best short technical introduction to game theory. Accessible to a broad audience, it will prove invaluable in artificial

intelligence, more generally in computer science, and indeed beyond." --Moshe Tennenholtz, Technion, Industrial Engineering and Management"Excerpted from a much-anticipated, cross-disciplinary book on multiagent systems, this terse, incisive and transparent book is the ideal introduction to the key concepts and methods of game theory for researchers in several fields, including artificial intelligence, networking, and algorithms." --Vijay Vazirani, Georgia Institute of Technology, Computer Science"The authors admirably achieve their aim of providing a scientist or engineer with the essentials of game theory in a text that is rigorous, readable, and concise."

--Frank Kelly, University of Cambridge, Statistical Laboratory

## **Book Information**

Series: Synthesis Lectures on Artificial Intelligence and Machine Learning (Book 3)

Paperback: 104 pages

Publisher: Morgan and Claypool Publishers; 1 edition (June 27, 2008)

Language: English

ISBN-10: 1598295934

ISBN-13: 978-1598295931

Product Dimensions: 7.5 x 0.2 x 9.2 inches

Shipping Weight: 8.2 ounces (View shipping rates and policies)

Average Customer Review: 3.7 out of 5 starsÂ  See all reviewsÂ  (16 customer reviews)

Best Sellers Rank: #354,724 in Books (See Top 100 in Books) #90 inÂ  Books > Science & Math > Evolution > Game Theory #92 inÂ  Books > Textbooks > Computer Science > Artificial Intelligence #246 inÂ  Books > Computers & Technology > Computer Science > AI & Machine Learning > Intelligence & Semantics

## **Customer Reviews**

I am not a math major, and I found many of the mathematical notations a bit daunting. It has many questions, but would appreciate if the author could provide answers at the back of the book. Very often, concrete examples illustrating the maths behind the ideas could illuminate the mathematical notations to a non-mathematicians, and if the next edition could incorporate that, that will be most helpful to the non-mathematicians. The topic of Bayesian Games was not covered, which was a bit of a disappointment, as it is one of the books recommended by the professors teaching the course on Game Theory in Coursera, and that subject, Bayesian Games was covered in the course, so I was hoping that this book would expand on that topic, but it wasn't covered in this book.

Actually the title represents exactly what it is, a concise introduction. It's not necessarily for beginners. Certainly it would be better used by people that already know a little of Game Theory. It's not pretended to be a text book; it is more of a companion book with remainders than a textbook with exercises. More examples explained step to step would make more useful for people interested in learning on game theory.

This short (about 100 pages) book is an excellent introduction to game theory. Written for computer science students it is nonetheless accessible to anyone with a bit of mathematics in his/her background that includes elementary matrix and set theory and notation.

Got the book to go along with the free Stanford University course on Game Theory and the corresponding Auction Theory course by the same authors. I plan on getting the first, but more extensive book Multi-Agent Systems: Algorithmic Game-theoretic and Logical Foundations.

This incredible booklet is very fine piece of work for those who want to learn Game Theory in more direct way without setting aside the necessary rigor. The authors get directly to the point and put the most important definitions and concepts in a very clearly way. I have successfully applied this book to my undergrad students (some mathematical background are needed, but with correct directions most of them could get the grip). To graduate students this booklet is not sufficient, this attains only to the essentials, there are a lot of more extensive books on the market, and this book could be a good complement to these books. Negative points: I missed some exercises to help the reader to get the concepts fixed; the only exercises that are present go along with the text on "to-check" questions proposed to the reader. Some of they are important and could be at the end of each chapter. Also, the book page: [...] still needs more work and increase of contents. Summing all up, this book is short and sharp and sufficiently rigorous. Its reading is very thoughtful and pleasantly. I like it and recommend.

Nice book for starters as well as experts. Must read for anyone looking for Gamification. Loved the simplicity and depth.

Interesting thought process and the examples that are used were inciting full. Impressed with the small amount of material and the simplicity of the explanations, enjoyed reading the book.

It's

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