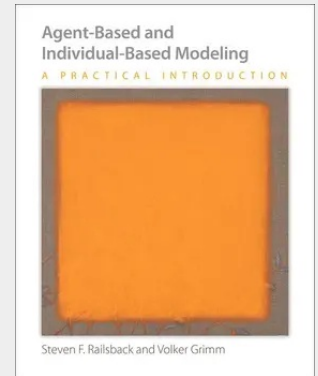


Agent-Based and Individual-Based Modeling - A Practical Introduction

Agent-based modeling is a new technique for understanding how the dynamics of biological, social, and other complex systems arise from the characteristics and behaviors of the agents making up these systems. This innovative textbook gives students and scientists the skills to design, implement, and analyze agent-based models. It starts with the fundamentals of modeling and provides an introduction to NetLogo, an easy-to-use, free, and powerful software platform. Nine chapters then each introduce an important modeling concept and show how to implement it using NetLogo. The book goes on to present strategies for finding the right level of model complexity and developing theory for agent behavior, and for analyzing and learning from models. Agent-Based and Individual-Based Modeling features concise and accessible text, numerous examples, and exercises using small but scientific models. The emphasis throughout is on analysis--such as software testing, theory development, robustness analysis, and understanding full models--and on design issues like optimizing model structure and finding good parameter values. The first hands-on introduction to agent-based modeling, from conceptual design to computer implementation to parameterization and analysis. Filled with examples and exercises, with updates and supplementary materials at <http://www.railsback-grimm-abm-book.com/>. Designed for students and researchers across the biological and social sciences. Written by leading practitioners.



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