

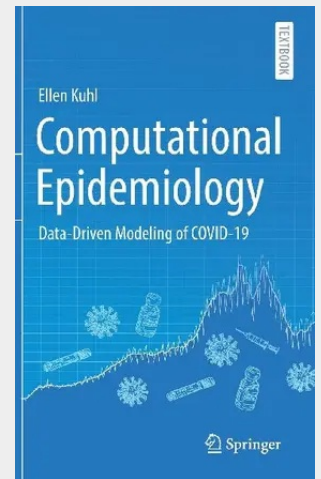
Computational Epidemiology

Data-Driven Modeling of COVID-19

This innovative textbook brings together modern concepts in mathematical epidemiology, computational modeling, physics-based simulation, data science, and machine learning to understand one of the most significant problems of our current time, the outbreak dynamics and outbreak control of COVID-19. It teaches the relevant tools to model and simulate nonlinear dynamic systems in view of a global pandemic that is acutely relevant to human health.

If you are a student, educator, basic scientist, or medical researcher in the natural or social sciences, or someone passionate about big data and human health: This book is for you! It serves as a textbook for undergraduates and graduate students, and a monograph for researchers and scientists. It can be used in the mathematical life sciences suitable for courses in applied mathematics, biomedical engineering, biostatistics, computer science, data science, epidemiology, health sciences, machine learning, mathematical biology, numerical methods, and probabilistic programming. This book is a personal reflection on the role of data-driven modeling during the COVID-19 pandemic, motivated by the curiosity to understand it.

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106,99 €

99,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783030828899

Medium: Buch

ISBN: 978-3-030-82889-9

Verlag: Springer

Erscheinungstermin: 23.09.2021

Sprache(n): Englisch

Auflage: 1. Auflage 2021

Produktform: Gebunden

Gewicht: 658 g

Seiten: 312

Format (B x H): 160 x 241 mm

