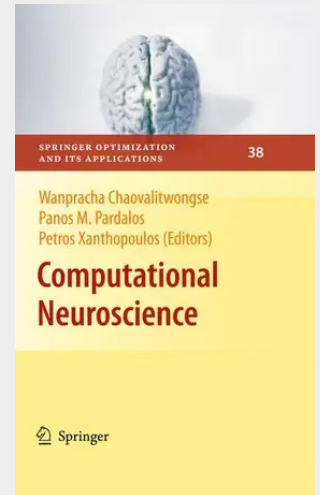


Computational Neuroscience

This book represents a collection of recent advances in computational studies in neuroscience research that practically applies to a collaborative and integrative environment in engineering and medical domains. This work has been designed to address the explosion of interest by academic researchers and practitioners in highly-effective coordination between computational models and tools and quantitative investigation of neuroscientific data. To bridge the vital gap between science and medicine, this book brings together diverse research areas ranging from medical signal processing, image analysis, and data mining to neural network modeling, regulation of gene expression, and brain dynamics. We hope that this work will also be of value to investigators and practitioners in academic institutions who become involved in computational modeling as an aid in translating information in neuroscientific data to their colleagues in medical - main. This volume will be very appealing to graduate (and advanced undergraduate) students, researchers, and practitioners across a wide range of industries (e. g. , pharmaceutical, chemical, biological sciences), who require a detailed overview of the practical aspects of computational modeling in real-life neuroscience problems. For this reason, our audience is assumed to be very diverse and heterogenous, including: vii viii Preface • researchers from engineering, computer science, statistics, and mathematics - mains as well as medical and biological scientists; •physicians working in scienti?c research to understand how basic science can be linked with biological systems.

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160,49 €

149,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9780387886299

Medium: Buch

ISBN: 978-0-387-88629-9

Verlag: Springer

Erscheinungstermin: 12.05.2010

Sprache(n): Englisch

Auflage: 1. Auflage 2010

Serie: Springer Optimization and Its Applications

Produktform: Gebunden

Gewicht: 824 g

Seiten: 396

Format (B x H): 160 x 241 mm

