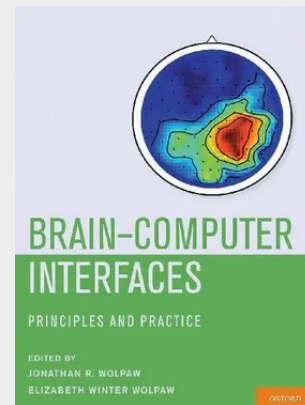


Brain-Computer Interfaces

Principles and Practice

In the last 15 years, a recognizable surge in the field of Brain Computer Interface (BCI) research and development has emerged. This emergence has sprung from a variety of factors. For one, inexpensive computer hardware and software is now available and can support the complex high-speed analyses of brain activity that is essential to BCI. Another factor is the greater understanding of the central nervous system including the abundance of new information on the nature and functional correlates of brain signals and improved methods for recording these signals in both the short-term and long-term. And the third, and perhaps most significant factor, is the new recognition of the needs and abilities of people disabled by disorders such as cerebral palsy, spinal cord injury, stroke, amyotrophic lateral sclerosis (ALS), multiple sclerosis, and muscular dystrophies. The severely disabled are now able to live for many years and even those with severely limited voluntary muscle control can now be given the most basic means of communication and control because of the recent advances in the technology, research, and applications of BCI. This book is intended to provide an introduction to and summary of essentially all major aspects of BCI research and development. Its goal is to be a comprehensive, balanced, and coordinated presentation of the field's key principles, current practice, and future prospects.

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333,90 €

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Lieferfrist: bis zu 10 Tage

Artikelnummer: 9780195388855

Medium: Buch

ISBN: 978-0-19-538885-5

Verlag: Oxford University Press

Erscheinungstermin: 01.01.2012

Sprache(n): Englisch

Auflage: 1. Auflage 2012

Produktform: Gebunden

Gewicht: 1820 g

Seiten: 424

Format (B x H): 221 x 286 mm

