Brain-Computer Interfaces: Principles and Practice

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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 is 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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Brain-Computer Interfaces: Principles and Practice From Brand: Oxford University Press Bibliography

- Sales Rank: #1326877 in Books
- Brand: Brand: Oxford University Press
- Published on: 2012-01-24
- Original language: English
- Number of items: 1
- Dimensions: 8.70" h x 1.20" w x 11.10" l, 3.52 pounds
- Binding: Hardcover
- 424 pages

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Review

"This is an excellent, first of its kind book dealing with an important, emerging topic. The editors have successfully summarized the current state of the art with regards to BCI. It is easy to see that it will be the first of many editions. All university, industry, and medical libraries need to have a copy on the shelf." -- Joseph I Sirven, MD, Mayo Clinic Arizona, *Doody's*

"Anyone concerned with the future of neuroscience cannot ignore the implications and applications of the story laid out by Jonathan R. Wolpaw and Elizabeth Winter Wolpaw in *Brain Computer Interfaces. Principles and Practice.*" -- *Brain*

"A reference book on Brain Computer Interfaces was lacking up to now, and this excellent one is bound to be extremely useful to the researchers working in this interdisciplinary field." -- *BioMedical Engineering OnLine*

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