



Advances in Self-Organising Maps  
Measurement, Instrumentation, and Sensors Handbook  
Support Vector Machines, Regularization, Optimization, and Beyond  
Independent Component Analysis  
Digital Signal Processing with Matlab Examples, Volume 1  
Principles and Practice

**General-Purpose Software for Brain-Computer Interface Research, Data Acquisition, Stimulus Presentation, and Brain Monitoring**

"For the neuroscientist or psychologist who cringes at the sight of mathematical formulae and whose eyes glaze over at terms like differential equations, linear algebra, vectors, matrices, Bayes' rule, and Boolean logic, this book just might be the therapy needed." - Anjan Chatterjee, Professor of Neurology, University of Pennsylvania "Anderson provides a gentle introduction to computational aspects of psychological science, managing to respect the reader's intelligence while also being completely unintimidating. Using clear demonstrations, he guides students through a wide array of important approaches and tools, with little in the way of prerequisites...I recommend it with enthusiasm." - Asohan Amarasingham, The City University of New York This unique, self-contained and accessible textbook provides an introduction to computational modelling neuroscience accessible to readers with little or no background in computing or mathematics. Organized into thematic sections, the book spans from modelling integrate and firing neurons to processing sensory information. This non-technical guide shows how basic knowledge and modern computers can be combined for interesting simulations, progressing from early exercises utilizing spreadsheets, to simple programs in Python. Key Features include: Interleaved chapters that show how traditional computing constructs are simply disguised versions of the spread sheet methods. Mathematical facts and notation needed to understand the modelling methods are presented at their most basic and are interleaved with biographical and historical to demonstrate the themes and procedures of cognitive modelling. An excellent text for postgraduate students taking courses in research methods, computational neuroscience, computational modelling, cognitive science and neuroscience. It will be especially valuable to psychology students. Les interfaces cerveau-ordinateur (Brain-Computer Interfaces, BCI) sont des dispositifs qui mesurent l'activité cérébrale et la convertissent en messages ou commandes, offrant ainsi de nombreuses possibilités d'investigation. Ce second volume, Technologie et applications, permet d'appréhender le potentiel mais également les limites des BCI. Il présente leur utilisation dans différents domaines tels que les jeux vidéo, les neurosciences cognitives, le diagnostic de troubles de la conscience ou encore l'autonomie des personnes handicapées. Ce livre est fonctionnant avec le logiciel libre OpenVIBE. Il aborde tous les aspects techniques de mise en place d'une BCI, que ce soit du point de vue matériel ou logiciel. Les enjeux sociétaux de ces nouvelles technologies sont également exposés. Les notions essentielles développées dans cet ouvrage sont accessibles à toute personne s'intéressant aux interfaces cerveau-ordinateur. Des parcours thématiques proposent d'approfondir plus en détail les connaissances par discipline. A comprehensive guide to the conceptual, mathematical, and implementational aspects of analyzing electrical brain signals, including data from MEG, EEG, and LFP recordings. This book offers a comprehensive guide to the theory and practice of analyzing electrical brain signals. It explains the conceptual, mathematical, and implementational (via Matlab programming) aspects of time-, time-frequency-, and synchronization-based analyses of magnetoencephalography (MEG), electroencephalography (EEG), and local field potentials in nonhuman animals. It is the only book on the topic that covers both the theoretical background and the implementation in language that can be understood by readers without extensive formal training in mathematics, including cognitive scientists, neuroscientists, and psychologists. Readers who go through the book chapter by chapter and implement the examples in Matlab will develop an understanding of why and how analyses are performed, how to interpret results, what the methodological issues are, and how to apply these analyses. Researchers who are familiar with using automated programs to perform advanced analyses will learn what happens when they click the "analyze now" button. The book provides sample data and downloadable Matlab code. Each of the 38 chapters covers one analysis topic, and these topics progress from simple to advanced. Most chapters conclude with exercises that further develop the material covered in the chapter. Many of the methods presented (including convolution, the Fourier transform, and Euler's method) are grounded in the mathematical groundwork for other advanced data analysis methods. Readers who master the methods in the book will be well prepared to learn other approaches.

A Practical Guide to Brain-Computer Interfacing with BCI2000