DESCRIPTION

An important new work establishing a foundation for future developments in neural engineering

The Handbook of Neural Engineering provides theoretical foundations in computational neural science and engineering and current applications in wearable and implantable neural sensors/probes. Inside, leading experts from diverse disciplinary groups representing academia, industry, and private and government organizations present peer-reviewed contributions on the brain-computer interface, nano-neural engineering, neural prostheses, imaging the brain, neural signal processing, the brain, and neurons.

The Handbook of Neural Engineering covers:

• Neural signal and image processing--the analysis and modeling of neural activity and EEG-related activities using the nonlinear and nonstationary analysis methods, including the chaos, fractal, and time-frequency and time-scale analysis methods--and how to measure functional, physiological, and metabolic activities in the human brain using current and emerging medical imaging technologies

• Neuro-nanotechnology, artificial implants, and neural prosthesis--the design of multi-electrode arrays to study how the neurons of human and animals encode stimuli, the evaluation of functional changes in neural networks after stroke and spinal cord injuries, and improvements in therapeutic applications using neural prostheses

• Neurorobotics and neural rehabilitation engineering--the recent developments in the areas of biorobotic system, biosonar head, limb kinematics, and robot-assisted activity to improve the treatment of elderly subjects at the hospital and home, as well as the interactions
of the neuron chip, neural information processing, perception and neural dynamics, learning memory and behavior, biological neural networks, and neural control

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**ABOUT THE AUTHOR**

Metin Akay, PhD, is an interim chair and Professor of Bioengineering in the Harrington Department of Bioengineering at Arizona State University (ASU). He is Editor of the *IEEE Press Series on Biomedical Engineering* and the author, coauthor, or editor of fourteen books. His current research interests at the ASU Neural Engineering and Informatics, Wearable Technology, and Sensors Labs include the dynamics of motor function in Parkinson and post-stroke disease subjects, and the effect of developmental abnormalities and maturation on the dynamics of respiration.

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