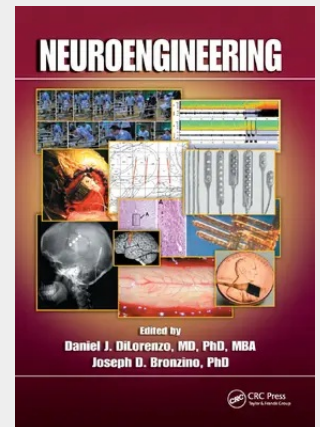


Neuroengineering

Based on a foundation of science and empirical observation, engineering research and design has brought science fiction into science fact. The convergence of neuroscience and technology is facilitating the development of therapies that not long ago would have seemed unimaginable, if not impossible. With contributions from pioneers in industry, academia, and clinical medicine, Neuroengineering provides an understanding of the history, physiology and the most promising engineering technologies. The book presents clinical applications of neuromodulation and a detailed review of the science and mechanisms of action underlying deep brain stimulation. Contributions include discussions of seizure control, clinical, surgical, and technological aspects of responsive neurostimulation, and a thorough review of spinal cord stimulation for pain control. The book highlights promising technologies and applications for neural augmentation, brain and computer interfaces, and motor prostheses. It concludes with coverage of the science underlying current neurostimulation techniques and new paradigm-shifting neuromodulation technologies. We are on the cusp of a technological revolution that promises to have more of an impact on human health, disease, and quality of life than any other in recent history. Its impact on medicine and society promises to be as dramatic as that of the development of antibiotics. The transition of neural engineering from basic research to intense commercialization and widespread clinical application and acceptance is just around the corner. Providing in-depth coverage of cutting-edge developments in technology and clinical practice, the book presents detailed descriptions of technologies, science, and clinical results that build a foundation for the future.



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