

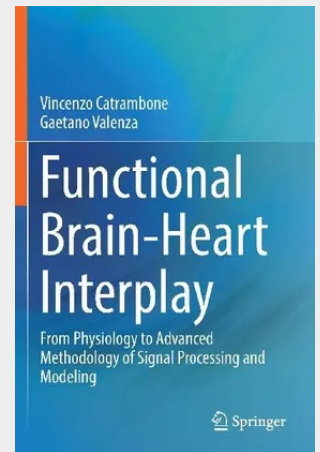
Functional Brain-Heart Interplay

From Physiology to Advanced Methodology of Signal Processing and Modeling

This monograph offers a cross-system exchange and cross-modality investigation into brain-heart interplay. Brain-Heart Interplay (BHI) is a highly interdisciplinary scientific topic, which spreads from the physiology of the Central/Autonomous Nervous Systems, especially Central Autonomic Network, to advanced signal processing and modeling for its activity quantification. Motivated by clinical evidence and supported by recent findings in neurophysiology, this monograph first explores the definition of basic Brain-Heart Interplay quantifiers, and then moves onto advanced methods for the assessment of health and disease states. Non-invasive use of brain monitoring techniques, including electroencephalogram and function Magnetic Resonance Imaging, will be described together with heartbeat dynamics monitoring through pulseoximeter and ECG signals.

The audience of this book comprises especially of biomedical engineers and medical doctors with expertise in statistics and/or signal processing. Researchers in the fields of cardiology, neurology, psychiatry, and neuroscience in general may be interested as well.

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