Neuromechanical Modeling of Posture and Locomotion /

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Monografía

For over a century, research has yielded enormous amounts of quantitative information about animal motor systems. Yet our understanding of neural control mechanisms of animal balance and locomotion remains cursory and fragmented. This book aims to change that. This is the first book on neuromechanical modeling, a tool that integrates the massive body of knowledge in computational models and complex motor behaviors to reveal the mechanisms by which these behaviors emerge. The majority of research groups working in this area have contributed chapters to this book. The book covers a wide range of topics from theoretical studies linking the organization of spinal reflex pathways and central pattern generating circuits with morphology and mechanics of the musculoskeletal system, to detailed neuromechanical models of balance and locomotor control, to analyses of nonlinear transformations of neural signals by the musculoskeletal system. This book can be used as an introductory guide to this new and exciting area of computational neuroscience research.

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neuromechanical modeling of balance and locomotion so hard? -- Neuromusculoskeletal modeling for the adaptive control of posture during locomotion -- Model-based interpretations of experimental data related to the control of balance during stance and gait in humans -- Computing motion dependent afferent activity during cat locomotion using a forward dynamics musculoskeletal model -- Modeling and optimality analysis of pectoral fin locomotion -- Control of cat walking and paw-shake by a multifunctional central pattern generator

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