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Analytical Biomechanics

By Mughal, Asif Mahmood

Condition: New. Publisher/Verlag: VDM Verlag Dr. Müller | Modeling and Optimal Controller Designs | In last century many engineers and scientist applied principal of mathematical theories to biological subjects and thus evolved new fields like biomechanics. A human biomechanical model which can mimic diverse 3D physiological movements is a challenging task. Hundreds of researchers obtained experimental data to study and analyze human movements. On the other hand, there are few researchers who provided analytical models for biological movements. This book provides new analytical modeling schemes to biomechanical movements, physiological motor control and combined musculoskeletal models with neurophysiologic controller to emulate muscle commands and joint torques. This book discusses the details of optimal controls with physiological cost functions to analyze the human sit-to-stand task for healthy and stroke patients. The biomechanical framework uses Maple and Matlab environments for modeling, control and simulation purposes. Major part of this work is peer-reviewed, and holds great potential to study task specific applications in kinesiology, ergonomics, and rehabilitation robotics, biomedical engineering and experimental validation of human voluntary movements. | Format: Paperback | Language/Sprache: english | 240 gr | 224x153x14 mm | 172 pp.



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