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| Titolo | Modeling, simulation and optimization of bipedal walking // Katja Mombaur and Karsten Berns (eds.) |
| Pubbl/distr/stampa | Berlin ; ; Heidelberg, : Springer, c2013 |
| ISBN | 3-642-36368-7 |
| Edizione | [1st ed. 2013.] |
| Descrizione fisica | 1 online resource (viii, 290 pages) : illustrations (some color) |
| Collana | Cognitive systems monographs, , 1867-4925 ; ; 18 |
| Altri autori (Persone) | MombaurKatja BernsKarsten |
| Disciplina | 629.8 629.8/932 |
| Soggetti | Robots - Motion - Mathematical models Robots - Motion - Simulation methods Bipedalism - Mathematical models Bipedalism - Simulation methods |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Includes author index. |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | From the Contents: Trajectory-Based Dynamic Programming -- Use of Compliant Actuators in Prosthetic Feet and the Design of the AMP-Foot 2.0 -- Modeling and Optimization of Human Walking -- Online CPG-based gait monitoring and optimal control of the ankle joint for assisted walking in hemiplegic subjects -- The combined role of motion-related cues and upper body posture for the expression of emotions during human walking. |
| Sommario/riassunto | The model-based investigation of motions of anthropomorphic systems is an important interdisciplinary research topic involving specialists from many fields such as Robotics, Biomechanics, Physiology, Orthopedics, Psychology, Neurosciences, Sports, Computer Graphics and Applied Mathematics. This book presents a study of basic locomotion forms such as walking and running is of particular interest due to the high demand on dynamic coordination, actuator efficiency and balance control. Mathematical models and numerical simulation and optimization techniques are explained, in combination with experimental data, which can help to better understand the basic underlying mechanisms of these motions and to improve them. |

Example topics treated in this book are Modeling techniques for anthropomorphic bipedal walking systems Optimized walking motions for different objective functions Identification of objective functions from measurements Simulation and optimization approaches for humanoid robots Biologically inspired control algorithms for bipedal walking Generation and deformation of natural walking in computer graphics Imitation of human motions on humanoids Emotional body language during walking Simulation of biologically inspired actuators for bipedal walking machines Modeling and simulation techniques for the development of prostheses Functional electrical stimulation of walking.
