



A haptic control framework for end-effector based gait simulation interfaces and its application in patient-adaptive rehabilitation training

By Sami Hussein

Fraunhofer Verlag Dez 2012, 2012. Taschenbuch. Condition: Neu. Neuware - The use of robots to assist therapy of neurological motor disfunctions, such as limited mobility, is an emerging research field. This book provides the first systematic application of a haptic control framework and assist as needed training paradigms to so called end-effector based gait simulation interfaces with a natural walking workspace, which fully carry the operator's bodyweight. The developed haptic control framework provides a unified controller architecture and a design method based on robust adaptive control. Thus it allows for the stable interaction with virtual training environments. The modular virtual environments combine a walking scenario with an adjustable assistance along the desired training motion. The framework is the basis to develop and implement compliant and patient-adaptive training strategies and, more generally speaking, haptic interaction on end-effector based gait interfaces. The prototype was successfully implemented and tested on the walking simulator HapticWalker. 125 pp. Englisch.



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