

1. Record Nr.	UNINA9910812137003321
Titolo	Interdisciplinary mechatronics : engineering science and research development // edited by Maki K. Habib, J. Paulo Davim
Pubbl/distr/stampa	London ; ; Hoboken, N.J., : ISTE/Wiley, 2013
ISBN	1-118-57707-8 1-118-57751-5 1-118-57723-X
Edizione	[1st ed.]
Descrizione fisica	1 online resource (621 p.)
Collana	ISTE
Altri autori (Persone)	HabibMaki K DavimJ. Paulo
Disciplina	629.89
Soggetti	Mechatronics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	<p>CONTENTS; Preface; Chapter 1. Interdisciplinary Mechatronics Engineering Science and the Evolution of Human Friendly and Adaptive Mechatronics; 1.1. Introduction; 1.2. Synergetic thinking, learning and innovation in mechatronics design; 1.3.Human adaptive and friendly mechatronics; 1.4.Conclusions; 1.5.Bibliography; Chapter 2. Micro-Nano mechatronics for Biological Cell Analysis and Assembly; 2.1. Introduction of micro-nano mechatronics on biomedical fields; 2.2. Configuration of micro-nano mechatronics; 2.3.Micro-nano mechatronics for single cell analysis</p> <p>2.4.Semi-closed microchip for single cell analysis 2.5. Biological cell assembly using photo-linkable resin based on the single cell analysis techniques; 2.6.Conclusion; 2.7 Acknowledgments; 2.8 Bibliography; Chapter 3. Biologically Inspired CPG-Based Locomotion Control System of a Biped Robot Using Nonlinear Oscillators with Phase Resetting; 3.1 Introduction; 3.2 Locomotion control system using nonlinear oscillators; 3.3 Stability analysis using a simple biped robot model; 3.4 Experiment using biped robots; 3.5 Conclusion; 3.6 Acknowledgments; 3.7 Bibliography</p> <p>Chapter 4. Modeling a Human's Learning Processes toward Continuous Learning Support System 4.1. Introduction; 4.2. Designing the continuous learning by a maze model; 4.3.The layout design of mazes</p>

for the continuous learning task; 4.4. Experiment; 4.5. Discussions; 4.6. Conclusions; 4.7. Acknowledgments; 4.8. Bibliography; Chapter 5. PWM Waveform Generation Using Pulse-Type Hardware Neural Networks; 5.1. Introduction; 5.2. PWM servo motor; 5.3. Pulse-type hardware neuron model; 5.4. Pulse-type hardware neural networks; 5.5. Measurements of constructed discrete circuit; 5.6. Conclusion; 5.7. Acknowledgments; 5.8. Bibliography; Chapter 6. Parallel Wrists: Limb Types, Singularities and New Perspectives; 6.1. Limb architectures and mobility analysis; 6.2. Singularities and performance indices; 6.3. New perspectives; 6.4. Bibliography; Chapter 7. A Robot-Assisted Rehabilitation System - RehabRoby; 7.1. Introduction; 7.2. Background; 7.3. Control architecture; 7.4. RehabRoby; 7.5. Controllers of RehabRoby; 7.6. Concluding remarks; 7.7. Acknowledgments; 7.8. Bibliography; Chapter 8. MIMO Actuator Force Control of a Parallel Robot for Ankle Rehabilitation; 8.1. Introduction; 8.2. Ankle rehabilitation robot; 8.3. Actuator force control; 8.4. Experimental results; 8.5. Concluding remarks; 8.6. Bibliography; Chapter 9. Performance Evaluation of a Probe Climber for Maintaining Wire Rope; 9.1. Introduction; 9.2. Optimize friction drive conditions using a prototype probe climber; 9.3. Impact of different surface friction materials for friction pulley made on elevation performance; 9.4. Damage detection test of elevator wire rope; 9.5. Damage detection through signal processing; 9.6. Integrity evaluation of wire rope through MFL strength; 9.7. Damage detection of wire rope using neural networks

Sommario/riassunto

Mechatronics represents a unifying interdisciplinary and intelligent engineering science paradigm that features an interdisciplinary knowledge area and interactions in terms of the ways of work and thinking, practical experiences, and theoretical knowledge. Mechatronics successfully fuses (but is not limited to) mechanics, electrical, electronics, informatics and intelligent systems, intelligent control systems and advanced modeling, intelligent and autonomous robotic systems, optics, smart materials, actuators and biomedical and biomechanics, energy and sustainable development, systems eng
