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Titolo	Trends in Control and Decision-Making for Human–Robot Collaboration Systems / / edited by Yue Wang, Fumin Zhang
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ISBN	3-319-40533-0
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (XIX, 418 p. 173 illus., 121 illus. in color.)
Disciplina	629.8
Soggetti	Control engineering Artificial intelligence Robotics Automation Control and Systems Theory Artificial Intelligence Robotics and Automation
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Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Introduction -- Part I: One-Human–One-Robot Collaboration -- Human–Robot Cooperative Control of a Redundant Dual-Arm Mobile Manipulator -- Assistive Optimal Control-on-Request with an Application in Standing Balance Control and Reinforcement -- A Learning Algorithm to Select Consistent Reactions to Human Movements -- Continuous Switchings between Trajectory Tracking and Force Minimization in Human-Robot Collaboration -- Estimating Human Intention during a Human-Robot Cooperative Task Based on the Internal Force Model -- Part II: One-Human–Multiple-Robot Collaboration -- Shared-Control for the Kinematic Model of a group of Rear-Wheel Drive Cars -- An Intelligent Human–Robot Interaction System Using Reinforcement Learning and Neural Networks -- Regret-Based Decision-Making for Human–Robot Collaborative Assembly in Manufacturing -- Designing Robot Behavior for Safe Human–Robot Interactions -- To Ask or Not to Ask: A Foundation for the Optimization

	of Human–Robot Collaborations -- Part III: Human–Swarm Collaboration -- Mutual Trust-based Co-Design of Control and Scheduling for Human-Swarm Collaboration -- Human-Swarm Interactions via Coverage of Time-Varying Densities -- A Passivity-Based Approach to Human–Swarm Interactions and Passivity Analysis of Human Operators.
Sommario/riassunto	This book provides an overview of recent research developments in the automation and control of robotic systems that collaborate with humans. A measure of human collaboration being necessary for the optimal operation of any robotic system, the contributors exploit a broad selection of such systems to demonstrate the importance of the subject, particularly where the environment is prone to uncertainty or complexity. They show how such human strengths as high-level decision-making, flexibility, and dexterity can be combined with robotic precision, and ability to perform task repetitively or in a dangerous environment. The book focuses on quantitative methods and control design for guaranteed robot performance and balanced human experience. Its contributions develop and expand upon material presented at various international conferences. They are organized into three parts covering: one-human–one-robot collaboration; one-human–multiple-robot collaboration; and human–swarm collaboration. Individual topic areas include resource optimization (human and robotic), safety in collaboration, abstraction of swarm systems to make them suitable for human control, modeling and control of internal force interactions for collaborative manipulation, and the sharing of control between human and automated systems, etc. Control and decision algorithms feature prominently in the text, importantly within the context of human factors and the constraints they impose. Applications such as assistive technology, driverless vehicles, cooperative mobile robots, and swarm robots are considered. Illustrative figures and tables are provided throughout the book. Researchers and students working in controls, and the interaction of humans and robots will learn new methods for human–robot collaboration from this book and will find the cutting edge of the subject described in depth.