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Nota di bibliografia	Includes bibliographical references at the end of each chapters and indexes.
Nota di contenuto	Computing Cusps of 3R Robots Using Distance Geometry -- Kinematic Mapping of SE(4) and the Hypersphere Condition -- Direct Kinematics of an Orthogonal 6PRRS Parallel Manipulator -- The Hidden Robot Concept: a Tool for Control Analysis and Robot Control-based Design -- Impact of Perturbation on Wire Tension Vector -- A Deployable Parallel Wrist with Simple Kinematics -- Geometric Derivation of 6R Linkages with Circular Translation -- Function Synthesis of the Planar 5R Mechanism Using Least Squares Approximation -- Some Remarks on the RRR Linkage -- Force Capability Polytope of a 4RRR Redundant Planar Parallel Manipulator -- Motion Planning of Non-holonomic Parallel Orienting Platform: A Jacobian Approach -- Non singular

Change of Assembly Mode Without any Cusp -- The Influence of Discrete-Time Control on the Kinematic-Static -- Behavior of Cable-Driven Parallel Robot with Elastic Cables -- Derivatives of Screw Systems in Body-fixed Representation -- Sharp Linkages -- Solvable Multi-Fingered Hands for Exact Kinematic Synthesis -- Non-Singular Assembly Mode Changing Trajectories in the Workspace for the 3-RPS Parallel Robot -- Influence of spring characteristics on the behavior of Tensegrity Mechanisms -- Human Motion Kinematics Assessment Using Wearable Sensors -- Stiffness Matrix of 6-DOF Cable-Driven Parallel Robots and its Homogenization -- Human Motion Mapping to a Robot Arm with Redundancy Resolution -- Analysis of Geometrical Force Calculation Algorithms for Cable-Driven Parallel Robots with a Threefold Redundancy -- Kinetostatic Analysis of Cable-Driven Parallel Robots with Consideration of Sagging and Pulleys -- Direct and Inverse Second Order Kinematics for Hyper-Redundant Parallel Robots -- Kinematic Design of Miura-Ori-Based Folding Structures Using the Screw Axis of a Relative Displacement -- On the Limitations on the Lower and Upper Tensions for Cable-driven Parallel Robots -- Characterization of the Subsystems in the General Three-System of Screws -- Geometrical Patterns for Measurement Pose Selection in Calibration of Serial Manipulators -- Stiffness Analysis of a Fully Compliant Spherical Chain with Two Degrees of Freedom -- Points, Lines, Screws and Planes in Dual Quaternions Kinematic -- Recovering Dual Euler Parameters from Feature-based Representation of Motion -- Kinematics and Dynamics of a 3-RPSR Parallel Robot Used as a Pipe-Bending Machine -- Kinematic Synthesis of a Watt I Six-bar Linkage for Body Guidance -- Collision-Free Workspace of 3-RPR Planar Parallel Mechanism via Interval Analysis -- Development of a One Degree of Freedom Mechanical Thumb Based on Anthropomorphic Tasks for Grasping Applications -- Trifurcation of the Evolved Sarrus-Motion Linkage Based on Parametric Constraints -- The Kinematics of Containment -- The Dimensional Synthesis of 3-RPR Parallel Mechanisms for a Approximating Constrained Hand Paths via Kinematic Synthesis with Contact Specifications -- Investigation of Error Propagation in Multi-Backbone Continuum Robots -- Kinematics of Expansive Planar Periodic Mechanisms -- From Inverse Kinematics to Optimal Control -- New Gravity Balancing Technique and Hybrid Actuation for Spatial Serial Manipulators -- Analysis of Constraint Equations and Their Singularities -- Shape Optimized Heliostats for Kinematic Sun Tracking -- Efficient Resolution of Hyper-Redundancy Using Splines -- Kinematic Modeling of an EAP Actuated Continuum Robot for Active Micro-Endoscopy -- Kinematics Analysis and Singularity Loci of a 4-UPU Parallel Manipulator -- On the Kinematics of an Innovative Parallel Robot for Brachytherapy -- Reconfigurable and Deployable Platonic Mechanisms with a Variable Revolute Joint -- Conditions for Sub-6th Order Screw Systems Composed of Three Planar Pencils of Lines -- Automatic Optimal Biped Walking as a Mixed-Integer Quadratic Program -- Mechanisms with Decoupled Freedoms Assembled from Spatial Deployable Units -- Motion Capability of the 3-RPS Cube Parallel Manipulator -- Coupling of Trajectories for Human-Robot Cooperative Tasks -- Dynamic Analysis of 4 Degrees of Freedom Redundant Parallel Manipulator.

Sommario/riassunto

The topics addressed in this book cover the whole range of kinematic analysis, synthesis and design and consider robotic systems possessing serial, parallel and cable driven mechanisms. The robotic systems range from being less than fully mobile to kinematically redundant to overconstrained. The fifty-six contributions report the latest results in robot kinematics with emphasis on emerging areas such as design and

control of humanoids or humanoid subsystems. The book is of interest to researchers wanting to bring their knowledge up to date regarding modern topics in one of the basic disciplines in robotics, which relates to the essential property of robots, the motion of mechanisms.