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Nota di contenuto	Intro -- Preface -- Organization -- Contents - Part I -- Robotic Dexterous Manipulation -- A Spatial Layout Method of Robots Relative to Operating Space Based on Its Flexible Workspace Simulation -- 1 Introduction -- 2 Kinematics Analysis Based on Screw Theory -- 3 Workspace Optimization and Layout of the Six-DOFs Robot -- 3.1 Workspace Optimization of the Six-DOFs Robot -- 3.2 Layout of the Six-DOFs Robot -- 4 Simulation Example and Its Analysis -- 5 Conclusion and Future Work -- References -- Hand Posture Reconstruction Through Task-Dependent Hand Synergies -- 1 Introduction -- 2 Experiment Description -- 2.1 Participants -- 2.2 Apparatus and Experimental Procedure -- 3 Hand Synergies Extraction -- 3.1 Grasp Types Clustering -- 3.2 Task-Dependent Hand Synergies Extraction -- 4 Results and Discussion -- 4.1 Clustering Results of the GRASP Taxonomy -- 4.2 Overall Dependencies Between Finger Joints -- 4.3 The Joint Contribution to Task-Dependent Hand Synergies -- 5 Conclusion -- References -- Application of CG Pseudo-spectral Method to Optimal Posture Adjustment of Robot Manipulator -- 1 Introduction -- 2 Problem Formulation -- 2.1 Dynamic Model of the Robot Manipulator -- 2.2 Optimal Control -- 3 CG Pseudo-spectral Method -- 3.1 The Affine Transformation of Time and Approximation of Variable -- 3.2 Procedure of Optimization -- 4 Simulation Results -- 4.1 Parameters and Objective Settings -- 4.2 Results of Three Cases -- 4.3 Discussions -- 5 Conclusions -- References -- Semi-autonomous Robotic Manipulation by Tele-Operation with Master-Slave Robots and Autonomy Based on Vision and Force Sensing -- 1 Introduction -- 2 Architecture of the Semi-autonomous System -- 3 Master-Slave Mapping for Teleopertation -- 4 Identification and Location of Screw Nut by Vision -- 5 Fitting Screw Nut Based on Force Sensing -- 6 Implementation and Experiments. 7 Conclusion -- References -- Adaptive Grasping Strategy of Dexterous Hand Based on T-test -- 1 Introduction -- 2 Hardware Setup -- 3 Method -- 3.1 Slip Detection Algorithm Based on T-test -- 3.2 Adaptive Grasping Strategy -- 4 Experimental Evaluation -- 4.1 Experimental Evaluation of Slip Detection Algorithm -- 4.2 Experimental Evaluation of Adaptive Grasping Strategy -- 5 Conclusion -- References -- Reinforcement Learning Strategy Based on Multimodal Representations for High-Precision Assembly Tasks -- 1 Introduction -- 2 Learning Strategy Based on Multimodal Fusion -- 2.1 Latent Representation -- 2.2 Pose Estimation Based on Supervised Learning -- 2.3 Policy Learning -- 2.4 Controller -- 3 Simulation and Results Analysis -- 3.1 Simulation Environment -- 3.2 Design of Reward Function -- 3.3 Implementation Details -- 3.4 Results -- 4 Conclusions -- References -- A Scalable Resource Management Architecture for Industrial Fog Robots -- 1 Introduction -- 2 Architecture -- 2.1 Resource Management -- 2.2 The Architecture -- 3 Case Study -- 3.1 Difficulties -- 3.2 The Proposed Solution -- 4 Evaluation -- 4.1 Simulation Environment -- 4.2 Single Pod -- 4.3 Architecture

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1 Analysis of Magnetic Flux Leakage Detection Principle of Cable Broken Wire.

Sommario/riassunto

The 4-volume set LNAI 13013 – 13016 constitutes the proceedings of the 14th International Conference on Intelligent Robotics and Applications, ICIRA 2021, which took place in Yantai, China, during October 22-25, 2021. The 299 papers included in these proceedings were carefully reviewed and selected from 386 submissions. They were organized in topical sections as follows: Robotics dexterous manipulation; sensors, actuators, and controllers for soft and hybrid robots; cable-driven parallel robot; human-centered wearable robotics; hybrid system modeling and human-machine interface; robot manipulation skills learning; micro_nano materials, devices, and systems for biomedical applications; actuating, sensing, control, and instrumentation for ultra-precision engineering; human-robot collaboration; robotic machining; medical robot; machine intelligence for human motion analytics; human-robot interaction for service robots; novel mechanisms, robots and applications; space robot and on-orbit service; neural learning enhanced motion planning and control for human robot interaction; medical engineering.