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Jumping Performance of Compliant One-Legged Robots -- The Topologies Characteristics and Behaviors Design of the Curling Hexapod Robot -- Hierarchical Trajectory Optimization for Humanoid Robot Jumping Motion -- A Navigation and Control Framework of Quadrupedal Robot for Autonomous Exploration in Cave Environments -- Design and Development of The Small Hexapod Walking Robot HexWalker III -- A Rigid-Flexible Coupling Recursive Formulation for Dynamic Modeling of Biped Robots -- Robots in Tunnelling and Underground Space -- Path Planning for Muck Removal Robot of Tunnel Boring Machine -- Research on Snake-Like Robot for Cutter Inspection in Tunnel Boring Machine -- Shield Tail Seal Detection Method Driven by Twin Simulation Model Based on Intelligent Shield -- Support Boot Mechanisms of Shaft Boring Machine for Underground Vertical Tunnel Construction -- Development and Application of Rectangular Tunneling Boring Machine for Trenchless Urban Rail Transit Station Construction -- The Gordian-Innovation Technology and Recent Construction Application of Special-shaped Tunnel Boring Machine -- Research on Visual Localization of Cutter Changing Robot in Unstructured Environments -- Design of Hybrid Shield Cutter-Changing Robot and Its Motion Control Method -- TBM tunnel surrounding rock debris detection based on improved YOLO v8 -- Development and application of large curved shape pipe-roof with rectangular jacking machine under the Yangtze River -- A Shield Machine Segment Position Recognition Algorithm Based On Improved Voxel And Seed Filling -- Kinematics and Workspace Analysis of a Disc Cutter Replacement Manipulator for TBM in a Constrained Motion Space -- Mechanism Surrogate Based Model Predictive Control of Hydraulic Segment Assembly Robot with Sliding Friction -- An Investigation into Fatigue Damage and Clearance Evolution of TBM Main Bearings -- Outlier Detection and Correction for Time Series of Tunnel Boring Machine -- Robotic Machining of Complex Components -- Error Sensitivity Analysis and Tolerance Allocation Simulation of a Five-Axis Parallel Machining Robot -- High-Precision Point Cloud Data Acquisition for Robot Based on Multiple Constraints -- Flexible Functional Component for Fluidic Soft Robots -- Passive Rotation Compensation for The Cylindrical Joints of the 6-Ucu Parallel Manipulator -- Research on BP Neural Network Prediction of Position Error Considering the Variation of Industrial Robot Center of Mass -- Real-time Smooth Corner Trajectory Planning for Industrial Robots under Linear and Angular Kinematic Constraints -- Admittance Control for Robot Polishing Force Tracking Based on Reinforcement Learning -- Research on the Milling Process Damping and Stability Considering Additional Vibration -- Deep Learning-Based CNN-LSTM Model Used for Predicting Pose Error of Stewart Platform -- Research on the Influence of Forced Vibration on Process Damping and Stability Boundary in Milling -- Positioning Error Modelling and Compensation Method for Robot Machining Based on RVM -- Design and Implementation of a Novel Agricultural Robot with Multi-Modal Kinematics -- Research on High Precision Scanning Reconstruction Algorithm for Robot with Line Laser Scanner -- Smooth Joint Motion Planning for Robot Polishing by Redundancy Optimization -- Vision-Guided Mobile Robot System for The Assembly of Long Beams on Aircraft Skin -- Generation of Collision-Free Tool Posture for Robotic Belt Grinding Blisk Using Visualization Toolkit -- Clinically Oriented Design in Robotic Surgery and Rehabilitation -- A Segmented Dynamic Movement Primitives-Based Gait Assistive Strategy for Soft Ankle Exosuit -- A Magnetically Actuated Diatom-Biohybrid Microrobot as a Drug Delivery Capsule -- Research on Improved Microscope

Calibration Method Based on Coplanar Points -- Kinematics Analysis and Control of a Novel Macro-Micro Integrated Hybrid Robot for Medical Surgery -- Comparative Study of Feature-Based Surface Matching Automatic Coarse Registration Algorithms for Neuronavigation -- The Effect of Channel Ordering Based on the Entropy Weight Graph on the MI-EEG Classification -- Fuzzy Variable Admittance Control -Based End Compliance Control of Puncture Ablation Robot -- Deep Forest Model combined with Neural Networks for Finger Joint continuous Angle Decoding -- 2D/3D Shape Model Registration with X-Ray Images for Patient-Specific Spine Geometry Reconstruction -- Visual and Visual-tactile Perception for Robotics -- Real-Time Detection of Surface Floating Garbage Based on Improved Yolov7 -- Real-Time Map Compression Method Based on Boolean Operation and Moore-Neighborhood Search -- Research on Location Algorithm of 5G Ceramic Filter Based on Machine Vision -- MLP Neural Network-Based Precise Localization of Robot Assembly Parts.

Sommario/riassunto

The 9-volume set LNAI 14267-14275 constitutes the proceedings of the 16th International Conference on Intelligent Robotics and Applications, ICIRA 2023, which took place in Hangzhou, China, during July 5–7, 2023. The 413 papers included in these proceedings were carefully reviewed and selected from 630 submissions. They were organized in topical sections as follows: Part I: Human-Centric Technologies for Seamless Human-Robot Collaboration; Multimodal Collaborative Perception and Fusion; Intelligent Robot Perception in Unknown Environments; Vision-Based Human Robot Interaction and Application. Part II: Vision-Based Human Robot Interaction and Application; Reliable AI on Machine Human Reactions; Wearable Sensors and Robots; Wearable Robots for Assistance, Augmentation and Rehabilitation of Human Movements; Perception and Manipulation of Dexterous Hand for Humanoid Robot. Part III: Perception and Manipulation of Dexterous Hand for Humanoid Robot; Medical Imaging for Biomedical Robotics; Advanced Underwater Robot Technologies; Innovative Design and Performance Evaluation of Robot Mechanisms; Evaluation of Wearable Robots for Assistance and Rehabilitation; 3D Printing Soft Robots. Part IV: 3D Printing Soft Robots; Dielectric Elastomer Actuators for Soft Robotics; Human-like Locomotion and Manipulation; Pattern Recognition and Machine Learning for Smart Robots. Part V: Pattern Recognition and Machine Learning for Smart Robots; Robotic Tactile Sensation, Perception, and Applications; Advanced Sensing and Control Technology for Human-Robot Interaction; Knowledge-Based Robot Decision-Making and Manipulation; Design and Control of Legged Robots. Part VI: Design and Control of Legged Robots; Robots in Tunnelling and Underground Space; Robotic Machining of Complex Components; Clinically Oriented Design in Robotic Surgery and Rehabilitation; Visual and Visual-Tactile Perception for Robotics. Part VII: Visual and Visual-Tactile Perception for Robotics; Perception, Interaction, and Control of Wearable Robots; Marine Robotics and Applications; Multi-Robot Systems for Real World Applications; Physical and Neurological Human-Robot Interaction. Part VIII: Physical and Neurological Human-Robot Interaction; Advanced Motion Control Technologies for Mobile Robots; Intelligent Inspection Robotics; Robotics in Sustainable Manufacturing for Carbon Neutrality; Innovative Design and Performance Evaluation of Robot Mechanisms. Part IX: Innovative Design and Performance Evaluation of Robot Mechanisms; Cutting-Edge Research in Robotics.