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Autore	Matsuno Takayuki
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Altri autori (Persone)	LiuHonghai LiuLianqing YinZhouping ZhuXiangyang RenWeihong WangZhiyong ShengYixuan
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Nota di contenuto	-- Robotic Dexterous Manipulation and Intelligent Control. -- A Physics-informed Neural Network-based Momentum Observer Considering Velocity Effects for Contact Force Estimation in Industrial

Robots. -- A High-Precision and Compliant Interaction Method for Robot Based on Model Predictive Impedance Control. -- Dynamics Modeling and Vibration Suppression of Industrial Robots Handling Flexible Payloads. -- Dual-Channel Adaptive Impedance Algorithm with Leveling Module in Dual-Arm Collaborative Robots. -- RL-Force: Reinforcement Learning with Force Estimation for Humanoid Locomotion Subject to Continuous External Disturbances. -- Intrinsic Vision-Based Learning for Proprioceptive Sensing of Soft Pneumatic Actuators. -- Visual-Guided Diffusion Policy and Mesh-DMP Integration for Robotic Freeform Surface Polishing. -- Boosting Industrial Changeover Efficiency: A Large-Model-Based Explore-Then-Reproduce Framework for Changeover Tasks. -- Learning Human-like Finger Gaiting on an Anthropomorphic Hand. -- Learning Stable Nonlinear Dynamical Systems With Symmetric Negative Definite Matrix Generation Network. -- Object's CoM-Aware Pose Optimization of Humanoid Upperlimbs for Dual-Arm Collaborative Carrying. -- Contact Driven Functional Grasp Synthesis via Hand-Object Interaction State Representation. -- Intelligent Perception and Control Technologies for Marine Robotic Systems. -- Co-Simulation of Trajectory Tracking Control for Underwater Vehicles: A Case Study on RexROV Using Simulink and UUV Simulator. -- An Elastodynamic Modeling Approach on Component Mode Synthesis for Hybrid Machining Cell. -- Safety-Critical Flocking Control of Multiple Unmanned Surface Vehicles Based on Exponential Control Barrier Functions. -- Research on hybrid buoy inclined landing motion control. -- Fast and Automatic Dock for Precise UAV Landing on a USV in Marine Environment. -- Positioning and Orientation for Single LiDAR of USVs Obstructed By Offshore Operation Platform. -- A Fault Diagnosis Scheme for Underwater Thrusters Considering Sensor Faults. -- Bio-Inspired Soft Robotic Arms Capable of Object Grasping and Bipedal Locomotion in Amphibious Environments. -- Position Compensation Method for Cable-Pulling Robot in Generator Maintenance without Rotor Removal. -- Intelligent Technology in Neural Decoding, Modulation, and Interfacing. -- Research on Pose Control Dataset Augmentation Method Based on Generative Adversarial Networks. -- Optimal Electrode Configuration for Wrist sEMG-Based Gesture Recognition: A Systematic Evaluation of Number and Placement. -- Robotic Grinding of Thin-Walled Parts: Reinforcement Learning-Based Chatter Suppression Method. -- Electrode shift-robust decomposition of surface EMG signals via deep learning: A simulation study. -- Enhancing Softness Discrimination in Vision-Based Tactile Sensors via Modeling and Optimization of Gradient-Stiffness Elastomers. -- Filtering Selection for High-density sEMG in Motor Unit Decomposition. -- Sensory Input Shapes Motor Output: Decoding Corticomuscular Coherence under Vibration-Induced Modulation. -- Adaptive Network Design for SSVEP/SSMVEP Classification via SE and Congurable Convolutions. -- Multimodal Assessment of Visual-Motor Integration in Attention Deficit/Hyperactivity Disorder. -- Comparison of Propagation and Activation Characteristics of Motor Units Decomposed from Wrist and Forearm Surface Electromyography Signals. -- High-Discrimination Multi-Level Electrotactile Feedback via Compound Perception Descriptors and Efficient Calibration. -- Cross-Task EEG Mental Workload Detection in Aviation: An LSTM Framework Leveraging Task-Invariant Neural Signatures. -- Wearable Robots for Assistance, Augmentation and Rehabilitation of Human Movements. -- A Physiology-Informed Training Protocol for Cross-Paradigm Transfer Learning in ErrP-based Brain-Computer Interface. -- Design and Implementation of Thermoplastic Composite Robotic Winding System.

-- A Stretchable Resistive Electronic Skin for Shape Sensing of End Continua of Flexible Surgical Instruments. -- An Intelligent Process Decision-Making Method for Robotic Grinding Random Defects via Incremental Learning and Database. -- Knee Prosthesis Stair Ascending with Adaptive Clearance and Foot Placement. -- A Hybrid FES-Soft Exosuit System to Improve Interlimb Symmetry in Post-Stroke Patients. -- Digital Twin Modeling and Performance Evaluation of a Gimbal Servo System. -- Kinematics Modeling and Calibration of a Continuum Manipulator Considering Nonconstant Elasticity. -- Predictive Modeling of Robot Deformation Errors via Incremental Learning. -- Soft Robotics. -- Design and Analysis of a Morphing Wing Based on Corrugated-honeycomb Structure for UAV. -- Design and Analysis of a Novel Metamaterial with Tunable Coefficient of Thermal Expansion. -- Neural Implicit Embedded PWM Control Approach for Dielectric Elastomer Actuators with Rate-Dependent Viscoelasticity. -- Design of a Rigid–Elastic–Soft Coupled DELTA Mechanism with Variable Cartesian Stiffness. -- Pneumatic kirigami actuators with programmable motion for versatile robotic functionalities. -- Stress Monitoring and Adaptive Grasping for Robotic Grippers Using Distributed Optical Fiber Sensing. -- Radial Basis Function Neural Network-Based Adaptive Trajectory Tracking Control for Continuum Robots.

Sommario/riassunto

The 3-volume set, LNAI 16074-16076, constitutes the proceedings of the 18th International Conference on Intelligent Robotics and Applications, ICIRA 2025, which took place in Okayama, Japan, during August 6-9, 2025. The 165 full papers included in these proceedings were carefully reviewed and selected from 329 submissions. They were organized in topical sections as follows: Part 1: Robotic Dexterous Manipulation and Intelligent Control; Intelligent Perception and Control Technologies for Marine Robotic Systems; Intelligent Technology in Neural Decoding, Modulation, and Interfacing; Wearable Robots for Assistance, Augmentation and Rehabilitation of Human Movements; Soft Robotics. Part 2: Hand-Centric Human-Robot Collaboration Advances in Perception, Control, and Interaction; Intelligent Technology in Healthcare; Advanced Localization, Navigation and Control Technologies in Intelligent Robotic Systems; Wearable Robotics for Gait Analysis, Training, and Rehabilitation; Embodied Intelligence in Biomimetic Robotics, Humanoid Robotics. Part 3: Magnetic Actuated Microrobots for Biomedical Engineering Design, Control, and Application; Innovative Design and Performance Evaluation of Robot Mechanisms; Sensation-Perception-Actuation-Rehabilitation Oriented Technologies for Wearable Exoskeletons; Pattern Analysis and Machine Intelligence: Vision, Language, Multimodal Learning, and Applications; Bio-mechatronic Integration and Rehabilitation Robots.
