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Autore	Pisla Doina
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Nota di contenuto	Part I: Perception and Learning -- Determining Sample Quantity for Robot Vision-to-Motion Cloth Flattening -- Outliers - Do Image and Feature Domain Outliers Coincide in Robotic Applications? -- An algorithm for determining the coordinates of a test tube by a robotic aliquoting system based on a combination of the Hough method and a result filtering algorithm -- Deployment of Algorithms for Autonomous Drone Racing in a Real Environment -- Contactless Assembly of a Pi and a Plug Micropart with Electrostatic Force Fields -- Modern Quality Control: Integrating Computer Vision in Inspection of PCB Elements -- Cost-Effective Robot Arm Teleoperation via Human Pose Tracking with Monocular Camera -- Revolutionizing Speech Emotion Recognition: A Novel Hilbert Curve Approach for Two-Dimensional Representation and Convolutional Neural Network Classification -- Positioning of a Surgical Parallel Robot using Artificial Intelligence -- Effects of Increased Entropy on Robustness of Reinforcement Learning for Robot Box-Pushing -- Part II: Medical Robotics and Biomechanics -- Exploring the effects of different schemes of hallux valgus osteotomy on the stress based on computer digital simulation -- Dynamic Analysis of an Exoskeleton Robotic System for Stair Walking Assistance -- A Compact

Low-Frequencies Vibrational Bioreactor to Induce Cellular Response -- Design of wearable prostheses: a new approach -- Workspace Analysis for Laparoscopic Rectal Surgery : A Preliminary Study -- An Analysis of Virtual Reality Applications in Rehabilitation Engineering -- Low-Cost Functional Infrared Spectroscopy Based System as a Brain-Computer Interface -- Phenomenological modelling of the flexion-extension movement of human lower limb joints -- Continuous-Time Robust Control for Cancer Treatment Robots -- Accuracy and repeatability of a parallel robot for personalised minimally invasive surgery -- A Concise Review of Upper Limb Prostheses -- Analysis Study of Working Modes Within a Redundant Architecture for a Spherical Parallel Manipulator (SPM) -- MEDROVER: Medical Assistant Robot for patient monitoring and treatment management -- Mixed-Reality-Guided Teleoperation of a Collaborative Robot for Surgical Procedures -- Task Oriented Collaborative Robots: Intervention in Repetitive Task for Worker Well-Being -- Part III: Industrial Robots and Education -- Industry needs in Robotics Education -- Unimate and Beyond: Exploring the Genesis of Industrial Robotics -- Beyond the Horizon: Anticipating Future Challenges in the Field of Robotics -- A Short Overview on Terrestrial Hybrid Locomotion Mobile Robots -- Augmented Reality Guided 3D Printed Robotic Arm Assembly: A Comprehensive Framework for Interactive Learning -- Part IV: Kinematics and Dynamics -- Geometric Robot Calibration Using a Calibration Plate -- Algorithm for obtaining balanced specific sliding coefficients at the points where the meshing stars and ends for external spur gears -- A Novel Approach Exploiting Contact Points on Robot Structures for Enhanced End-Effector Accuracy -- Multi-axis AM: slicer and toolpath for 2.5D/3D/5D printing -- Comparative study of the kinematic performance indices for the 3-U (RPRGR)RU and the 3-URU parallel robots -- Kinematic Analysis of the Seven-Bar Linkage 7-PR(RRRR)RP used for Medical Disinfection Robot -- Experimental evaluation of a collision avoidance control for redundant manipulators -- Automatic Differentiation of Serial Manipulator Jacobians Using Multidual Algebra -- Mathematical and mechanical model of a tamping rammer for making rammed earth walls -- Establishing of Dynamic Control Functions for a Hybrid Robot based on Analytical Mechanics Principles -- Part V: Motion Planning and Control -- Time-Optimal Transport of Loosely Placed Liquid Filled Cups along Prescribed Paths -- Constrained Online Motion Generation from Unfiltered User Commands -- Orientation trajectory planning based on unit quaternions for spray painting robots -- RobotBlockSet (RBS) - A comprehensive robotics framework -- AI-based multi-criteria path planning of Cartesian robot with telescopic arm for tree fruit picking -- Design of a data collection system for robot digital twins -- Physical Interaction Interpretation in Industrial Robotics using Dynamic Time Warping Principles -- Electromagnetic Simulation of Robotic Dynamic Scenes for Novel Sensor Developments -- Challenges in Polystyrene Mold Making for Clay Panels Using Industrial Hotwire Carving -- Robotic platform for position control of a ball -- Part VI: Service Robotics and Applications -- Embracing the Gentle Touch: Design and Simulation of an Intelligent Soft Fingertip for Adaptive Agricultural Harvesting -- Increasing the Energy Efficiency of Robotic Workplaces -- Design of an under-actuated mechanism for collecting and cutting crop samples in precision agriculture -- An exoskeleton for overhead work support equipped with pneumatic artificial muscles: an insight on transmission design -- A Literature Review and Design Considerations Towards a Gripper for Tomato Harvesting -- Evaluating the Potential of Passive Exoskeletons in Modern Industries: A Comprehensive Analysis of the Impact on User Well-being and Efficiency -- Technological

analysis of types of milking systems and robots: A Review -- Part VII: Mobile Robots and Innovative Robot Design -- Mobile exploration robot with hybrid locomotion system -- 3D Printed Harmonic Drive for Legged Mobile Robots -- Modeling, parameter estimation and control design of 4WIS4WID mobile robot: Simulation and experimental validation -- Autonomous mobile robotic system for measuring the electrical conductivity of soil -- Design and test validation of humanoid tripod-based limbs -- Soft Grasping Delicate Parts by Robotic Effectors -- A 3D Printed Reconfigurable Multi-fingered Gripper.

Sommario/riassunto

This book presents the proceedings of the 33rd International Conference on Robotics in Alpe-Adria-Danube Region (RAAD), held in Cluj-Napoca, Romania, June 12-14, 2024. It gathers contributions by researchers from several countries on all major areas of robotic research, development and innovation, as well as new applications and current trends. The topics covered include: novel designs and applications of robotic systems, intelligent cooperating and service robots, advanced robot control, human-robot interfaces, robot vision systems, mobile robots, humanoid and walking robots, bio-inspired and swarm robotic systems, aerial, underwater and spatial robots, robots for ambient assisted living, medical robots and bionic prostheses, cognitive robots, cloud robotics, ethical and social issues in robotics, etc. Given its scope, the book offers a source of information and inspiration for researchers seeking to improve their work and gather new ideas for future developments.