

1. Record Nr.	UNINA9910899891303321
Autore	Vinjamuri Ramana
Titolo	Discovering the Frontiers of Human-Robot Interaction : Insights and Innovations in Collaboration, Communication, and Control // edited by Ramana Vinjamuri
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2024
ISBN	9783031666568 3031666569
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (491 pages)
Collana	Intelligent Technologies and Robotics Series
Disciplina	629.892
Soggetti	Robotics Biomedical engineering Artificial intelligence Robotic Engineering Biomedical Engineering and Bioengineering Artificial Intelligence Biomedical Devices and Instrumentation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Towards Genuine Robot Teammates: Improving Human-Robot Team Performance Beyond Shared Mental Models with Proactivity -- Speech-based Communication for Human-Robot Collaboration: Evaluation Studies -- Value Alignment and Trust in Human-Robot Interaction: Insights from Simulation and User Study -- Closing the loop between wearable robots and machine learning: a new paradigm for steering assistance personalization control -- New Horizons in Human-Robot Interaction: Synergy, Cognition, and Emotion -- High-level Framework in Wearable Exosuits involving Virtual Reality and Human-Robot Intent Interaction for Gait Intervention -- Active-Passive Exoskeletons for Assistive and Resistive Interventions in Human Walking -- Hydrodynamics of Microrobots: Effect of Confinement and Collisions -- Development of Fuzzy Controller for a Flexible Bevel-Tip Needle in Percutaneous Interventional Procedures -- Evolving Trends and Future Prospects of Transformer Models in EEG-based Motor-Imagery BCI

Systems -- Estimating Grasp Pose using Deep Learning Architectures for Intelligent Robotic Manipulation -- Visual Affordance Recognition: A Study on Explainability and Interpretability for Human Robot Interaction -- Experimental Verification of Force-assistive Optimal Variable Admittance Control of Haptic Systems -- Experimental Design Principles for Developing Machine Learning Models for Human-Robot Interaction -- Electrophysiological Measures for Human-Robot Collaboration Quality Assessment -- Design of a Virtual Chatbot platform for basic needs communication through Imagined Speech BCI -- Human-Robot Interaction in Biopsy Procedures: A Biomimetic Dual-Sheath Needle Design Inspired by Insect Ovipositor Mechanics -- Explainable AI Methods for Interpreting Emotions in Brain-Computer Interface EEG Data -- Robot Control via Natural Instructions Empowered by Large Language Model -- Emotion Awareness in Humanoids: Human Facial Expressions Recognition Using Deep CNN Models -- Scheduling Robotic Collaboration based on Human Motion Analysis.

---

### Sommario/riassunto

The field of Human-Robot Interaction (HRI) is rapidly evolving, blurring the lines between human and machine capabilities. Recent advances in computer science, computer vision, artificial intelligence, robotics, brain-computer interfaces, neural engineering, and cognitive science have profoundly transformed HRI. As we stand on the threshold of a new era characterized by increasingly sophisticated human-machine interactions, it becomes imperative to explore the emerging frontiers of this dynamic field. Robots are now entering homes, workplaces, and even battlefields, necessitating a deeper understanding of effective, safe, and ethical human-robot interaction. This book delves into cutting-edge research shaping the future of HRI, representing a collective effort to navigate uncharted territories. Through diverse chapters authored by leading experts, it offers a comprehensive exploration of the latest developments, challenges, and opportunities in HRI. By examining technical, engineering, and methodological challenges, this volume brings together perspectives from researchers, engineers, and designers to provide a comprehensive view of this dynamic field. Aiming to showcase groundbreaking research and spark interdisciplinary dialogue and collaboration, this book is a valuable resource for researchers, engineers, students, and anyone interested in the future of human-robot collaboration. Whether you are a seasoned roboticist, a curious student, or simply interested in future technology, this book offers insights and knowledge to navigate the complex world of human-robot interaction. Join us on this journey of discovery as we navigate the emerging frontiers of human-robot interaction together.

---