Enhancing Humanoid Robotics with AI-Driven Cognitive Vision for Intelligent Interaction

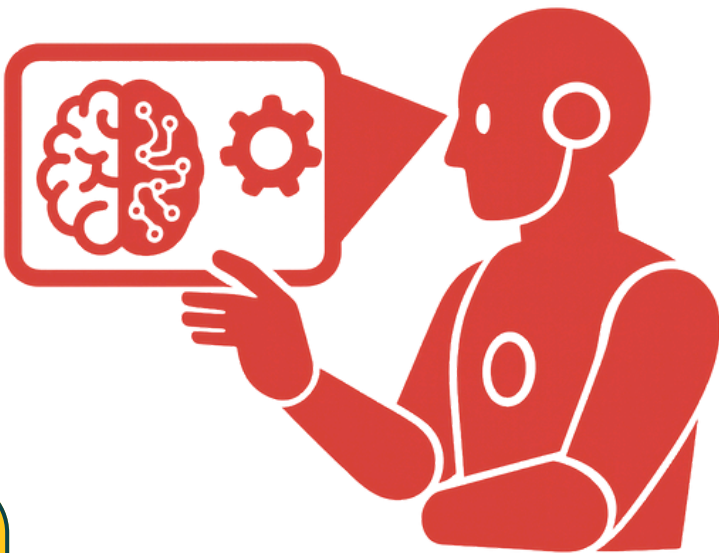**ACTA** Press

AIMS AND SCOPE

Artificial intelligence (AI) and humanoid robots are transforming medical procedures and patient care by improving diagnostic precision, early illness detection, and individualized treatment through the analysis of vast medical datasets. AI-enabled humanoid robots assist with repetitive tasks, patient monitoring, and even surgery, increasing productivity, supporting healthcare professionals, and encouraging patient involvement, while also raising important ethical considerations. Human-robot interaction (HRI) has advanced from robots following preset instructions to more natural and empathetic communication, incorporating emotional intelligence to recognize and respond to human emotions. Designed to resemble humans to varying degrees, humanoid robots combine sensing systems, computing power, and mechanical actuators, enabling them to interact organically with people and their surroundings. Studies highlight their effectiveness in healthcare, with social and companion robots reducing stress and improving mental well-being, particularly for children in treatment and those with autism, while telerobots and teleoperated machines show promise in hazardous and medical environments. Ongoing developments in autonomous systems, human-robot collaboration, and social robotics continue to broaden their applications, though many remain in early stages. At the core of applied AI in humanoid robotics is HRI, emphasizing smooth, intuitive cooperation through approaches like facial recognition, emotional understanding, and discourse management, aimed at creating socially aware robots capable of responding to human needs and conventions.

TOPICS AND THEMES

- A Systematic Assessment of AI and the Function of Humanoid Robotics in Modern Healthcare
- Integrated Robotics Intelligent Control: Improving Human-Robot Interaction with Adaptive Control Methods
- Conceptual Model for Developing AI-Assisted Collaborative Understanding in Industrial Humanoids
- Evaluation of Human-Robot Interaction and Difficulties with Task Organizing and Scheduling
- A Human-in-the-Loop Technique for Improved Human-Robot Collaboration via Extended Reality

- Human-Centric Design Requirements for Architects of Human-Robot Interaction with Intelligent Robots
- Impact of Human-Robot Interaction on Humanoid Robot Assistance Sensitivity of Customers
- Integrated Human-Robot Interaction through Multimodal Communication Using Natural Gestures
- Consequences of Robot Transparency and Teamwork Orientation on Human-Robot Collaboration
- Opportunities for Societal and Professional Affective Intelligence in Humanoid Robots
- Basis for a Hierarchy of Collaboration Levels for Manufacturing Human-Robot Interaction

- Submission Open Date: September 14th 2025
- Submission Deadline: March 30th 2026

Submissions to be accepted on a *rolling-basis* with notifications being sent as soon as a manuscript is accepted

SUBMIT NOW

SUBMISSION INFORMATION

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