

IROS 2026 Volting Cup Official Competition Rules

1. Competition Name

Volting Cup – Embodied Intelligence, Expressive
Humanoids & Inclusive Mobility

2. Core Competition Directions

The competition focuses on embodied intelligence research integrating art and assistive technology, combining robotic technology with inclusive dance and human-robot collaboration. The project investigates how emotional Expression emerges through the interaction among sound, music, human movement, and robotic wheelchair motion in inclusive dance performances involving dancers with disabilities.

Participants are required to carry out design and practice around two complementary experimental axes:

Axis 1: Humanoid Robots & Expressive Dance

Enable robots to complete dance performances that integrate technology and art. The core evaluation focuses on the robot's capabilities in:

- Whole-body dynamic balance and coordination
- Real-time synchronization with music and/or human partners
- Multimodal perception (vision, audio, motion sensing)
- Safe close-proximity interaction
- Expressive and legible motion generation
- Adaptive control and learning

This direction explores the technical implementation of human-robot co-creation, safety in dynamic interaction, and learning from demonstration.

Axis 2: Mobility Assistance Systems

Design around various assistive mobility devices, including:

- Robotic wheelchairs - Intelligent walkers
- Exoskeletons
- Smart wearable systems

The core evaluation focuses on the practical application capabilities of the devices in:

- Safe navigation
- Adaptive assistance

- User-centered control
- Ergonomics and accessibility
- AI-assisted decision support

3. Competition Format & Categories

(1) Submission Forms

- Video-based submissions
- Physical on-site demonstrations

(2) Artistic Performance Tasks (Optional/Synergistic)

- Human-robot dance
- Music interaction
- Light interaction
- Wheelchair dance
- Physical drama / musical theater

(3) Competition Platform Requirements

Participants shall use the following platforms for their entries, with $\geq 60\%$ original system development required:

- Humanoid robots
- Intelligent wheelchairs
- Exoskeleton systems
- Smart wearable systems

4. Evaluation System

(1) A multi-dimensional scoring model:

- Public voting
 - Artistic evaluation (creativity, expressiveness, multimedia integration, emotional impact)
 - Robotics technology evaluation (functionality, innovation, stability, task completion)
 - Inclusiveness evaluation (by clinicians and disability scholars, focusing on inclusiveness and social impact)
- The evaluation framework balances recognition of technical excellence, artistic integration, rehabilitation relevance and societal value.

(2) This multidimensional framework ensures balanced recognition of:

- Technical excellence (25 Points)
- Artistic integration (25 Points)
- Rehabilitation relevance (25 Points)
- Societal value (25 Points)

(3) Deduction Items

- Competition Duration: A deduction of 5 points for a performance shorter than 2 minutes or exceeding the

time (5-10 minutes) limit by less than 10 seconds; a deduction of 10 points for exceeding the time limit by more than 10 seconds; the competition will end if the time limit is exceeded by 1 minute.

- **Movement Interruption:** A deduction of 3 points for each interruption lasting 5-10 seconds; a deduction of 5 points for each interruption exceeding 10 seconds.

- **Falling of Clothing, Shoes, or Hand-Held Equipment/Ornaments:** A deduction of 3 points each time.

- **Out of Bounds or Loss of Control:** A deduction of 3 points each time.

- **Manual Intervention (including remote control, computer control, or physical assistance):** A deduction of 8 points each time.

5. Competition Schedule

March–May 2026

- Competition registration
- Project training and development

June–September 2026

- Regional selection
- National finals

IROS 2026 (Sept 27 – Oct 1, USA)

- International on-site competition
- Final evaluation and award ceremony

6. Key Notes for Participants

(1) The entry must focus on the core directions of embodied intelligence, expressive humanoids and inclusive mobility, with clear integration of technology and art/social value.

(2) Comply with the $\geq 60\%$ original system development requirement for the competition platform; the originality of the system will be verified in the evaluation.

(3) For video-based submissions, the video should clearly show the core functions and performance effects of the entry; for on-site demonstrations, ensure the stability and safety of the equipment.

(4) Abide by the competition schedule and all on-site management norms; any violation will result in disqualification.

The competition will provide a global academic and technical exchange platform, with opportunities for in-depth communication with international robotics experts, artists and rehabilitation scholars.