



RCAP CoSpace Humanoid OnStage Rules 2026

These are the official rules of the RoboCup Asia-Pacific CoSpace Humanoid OnStage.

The English version of these rules shall prevail over any translation.

1. Overview: A Global Platform for the AI Era

1.1 The Vision

- 1.1.1 In the AI era, every student must grow as an interdisciplinary learner where STEM, the arts, and AI literacy seamlessly connect. RCAP CoSpace Humanoid OnStage is a groundbreaking, one-of-a-kind global platform designed to make this a reality.

1.2 The Concept:

- 1.2.1 CoSpace Humanoid OnStage is a STEAM performance league that blends humanoid robotics, AI, virtual worlds, storytelling, and the arts. This league represents the pinnacle of the "imagination to impact" journey. Teams create an extraordinary live stage show where human performers, autonomous physical humanoid robots, and digital characters unite in a "real-virtual coexisting world"

1.3 The Goal

- 1.3.1 Rather than just studying AI in theory, students actively deploy it. This is where technology meets creativity, empowering young beginners to turn their boldest ideas into an unforgettable public performance. In CoSpace Humanoid OnStage league, teams create an original live show where human performers, physical autonomous robots, and virtual characters interact within a "real-virtual coexisting world".

1.4 AI Integration:

- 1.4.1 Teams are highly encouraged to use Generative AI tools as creative partners for ideation, scripting, music, 3D assets, and technical coding, demonstrating practical AI literacy.

2. AI as a Creative Partner: Component Creation

A core pillar of this competition is using Generative AI tools in a hands-on, frustration-free manner to build the performance. Teams are expected to act as the "directors" of AI, utilizing it heavily for:

2.1 Ideation & Scripting

- 2.1.1 Using Large Language Models (LLMs) to brainstorm unique themes, develop rich character backstories, and write the final theater or dance script.

2.2 3D Virtual Scenery

- 2.2.1 Prompting AI to generate custom 3D objects, immersive environmental textures, and architectural



designs to construct their digital stage.

2.3 Audio & Soundscapes

- 2.3.1 Crafting AI-generated original music, cinematic soundtracks, and synthesized voices to bring the humanoid actors to life.

2.4 Dynamic Visual Effects

- 2.4.1 Creating AI-generated video content, lighting sequences, and particle effects (like digital smoke, fire, or sparkles) to enhance the hybrid world safely.

2.5 Technical Assistance

- 2.5.1 Utilizing AI as a coding assistant to generate logic, debug communication protocols between the real and virtual worlds, and suggest gait-tuning parameters for humanoid balance.

3. Team and Age Requirements

3.1 Team Size

- 3.1.1 Teams must have between 2 and 5 members. No members or robots may be shared across different teams.

3.2 U12 Category:

- 3.2.1 All team members must be aged 12 and under.

3.3 U19 Category:

- 3.3.1 All team members must be aged 19 and under, with at least one member who is 13 or older.

* Age Determination Date: Age is determined as of July 1st of the competition year.

4. Authenticity, Mentoring, and Conduct

4.1 Originality:

- 4.1.1 All themes, storytelling, and choreography must be the team's unique and original ideas, rather than duplicates of other performances.

4.2 Plagiarism:

- 4.2.1 Teams are allowed to use external code, but they must credit the original creators and prioritize their own learning. Copyrighted music must follow local laws.

4.3 Mentoring:

- 4.3.1 Mentors and adults can guide teams, but they must not do the actual work for the students. Judges will verify this by asking students to explain how their robot components function.

4.4 Behavior:



- 4.4.1 All participants must behave politely and abide by the RoboCup Federation Code of Conduct.

5. The Real World (Physical Stage)

5.1 Stage Size:

- 5.1.1 The physical performance area is a 5 x 4 meter rectangle.

5.2 Robots:

- 5.2.1 Teams can use fully autonomous wheeled robots and humanoids. Any robot taller than 2 meters requires prior approval from the Organizing Committee.

5.3 Safety & Power:

- 5.3.1 No mains electricity is allowed; the maximum voltage is 48V DC or 25V AC RMS.
- 5.3.2 Lithium batteries must be stored in safety bags and supervised when charging.
- 5.3.3 Robots must be built safely with secure wiring, emergency stops, and no sharp edges.

5.4 Props:

- 5.4.1 Physical props including static robot display are encouraged. If props use water or fire, teams must consult the Organizing Committee first.

6. The Virtual World (Digital Stage)

6.1 Digital Extension:

- 6.1.1 The virtual world is a 3D environment projected onto a backdrop, which the team must run from their own laptop.

6.2 Virtual Scenery:

- 6.2.1 Teams must design 3D objects (like buildings or trees), dynamic atmospheric effects (smoke, fire, lighting), and embedded multimedia (music, videos).

6.3 Virtual Performers:

- 6.3.1 The digital stage is populated by programmable virtual wheeled robots and virtual humanoids, which are specifically used to demonstrate gait tuning.

6.4 Cinematography:

- 6.4.1 Teams will be judged on their creative use of a "virtual cameraman" to provide dynamic viewing angles of the digital 3D space.



7. Real-Virtual Hybrid Interaction

7.1 Core Requirement:

7.1.1 The virtual world is an active participant, not just a static backdrop.

7.2 Human Performers:

7.2.1 Humans are encouraged to act as a bridge in this "real-virtual coexisting world" by interacting with both the physical robots and the projected 3D scenery.

7.3 Visibility:

7.3.1 When performing, humans must ensure they do not block the judges' view of the robots or technical components.

8. Timing and Performance Procedures

8.1 Total Stage Time:

8.1.1 Teams have a strict maximum of 7 minutes on stage. This includes setup, presentation, the performance, restarts, and cleaning up. Exceeding 7 minutes results in a penalty.

8.2 Stage Presentation:

8.2.1 During their setup time, teams must deliver a **1 to 2 minute presentation in English**. This is used to introduce the team, the story, the AI-driven logic, and the technical features of their robots.

8.3 Narration:

8.3.1 It is required to include narration alongside the performance. This helps guide the general audience in understanding the storyline, the intended theme, and the integrated technology.

8.3.2 The narration must be delivered in either English or the official language of the host country.

8.4 Performance Routine:

8.4.1 The actual performance must be **between 1 minute 30 seconds and 4 minutes** long.

8.5 Restarts:

8.5.1 Teams may verbally request a restart at the judges' discretion, with no limit on the number of restarts, but the 7-minute timer will not stop.

8.6 Start/End:

8.6.1 The performance must end with a clear signal (e.g., thanking the audience or taking a final bow).

RCAP CoSpace OnStage Technical Committee