RoboCupJunior OnStage Entry Rules 2025

OnStage League Committee 2025:

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These are the recommended rules of the *RoboCup Federation* for the *RoboCupJunior* (RCJ) OnStage Entry events in 2025. There will be **no OnStage Entry competition at the international level**. The rules are meant to be used at regional and super-regional events.

Regional and super-regional tournament organizers may use these rules, make changes specific to their regions or not run Entry leagues at all. Contact your regions or super-regions tournament organizers to find out which rules are going to be used at your tournament.

The OnStage Entry League is open to students in the age from 10 to 16 years (age as of 1st of July).

A participant may only participate twice in an Entry league competition of a regional RCJ qualification final (e.g. German Open, Portuguese Open, etc.). A participant is allowed to participate in a qualification competition for a regional final without restrictions.

The final decision about the admission criteria is up to the local organizers.

The rules, score sheets, and all forms of documentation can be downloaded from the official RoboCupJunior website (https://junior.robocup.org). Each team has a responsibility to verify the latest version of the offical rules of the specific event it participates in. Teams are encouraged to study all documents in detail.

RoboCupJunior Forum

For inquiries and questions about the rules or competition updates, the **Official RoboCupJunior forum** (https://junior.forum.robocup.org/) can be used to contact the OnStage League Committee. All official communication from the committee will be published here before and during the competition season.

Overview

RoboCupJunior OnStage invites teams to design, build and program creative and autonomous physical robots. The objective is to create a live robotic performance. This includes a range of possible performances, such as dance, storytelling, theater, or art installations. The performance may involve music, but this is optional.

1 RoboCupJunior International 2025 General Rules

1.0.1 Please note, that regional, super-regional, and local tournaments may have variations or adaptations to these rules to suit their specific competition needs. It is important to check with the organizers of the tournaments you are participating in to confirm which exact rules will be in use.

1.0.2 If teams are unsure about any aspects of the General Rules or specific League Rules, they are encouraged to inquire via the official RoboCupJunior Forum for clarification: https://junior.forum.robocup.org/

1.1 Team requirements

1.1.A Team Size

1.1.A.1 **Minimum Team Size**: Teams must consist of at least 2 members.

1.1.A.2 **Shared Members and Robots**: No team member(s) or robot(s) may be shared between teams.

1.1.A.3 **Junior Mentor Requirement**: Each Junior team must have at least one Junior Mentor registered and attending with the team.

1.1.B Age Requirements

1.1.B.1 **Junior Mentors and Parent/Chaperones:** Must be 19 years or older as of the competition start date.

1.1.C Team Members

1.1.C.1 **Entry Leagues**: RoboCupJunior Entry leagues and other ”Primary” divisions (where minimum age may vary) are not run at the international competition but feature in many regions and SuperRegional tournaments.

1.1.C.2 **Technical Roles**: Every team member must have a defined technical role (mechanical/design, electrical/sensing, software etc.) and should be able to explain their role during technical judging.

1.2 Robot Requirements

1.2.A Robot Communication

1.2.A.1 **Permitted Communication**: Communication between robots during gameplay is allowed as long as it uses the 2.4GHz spectrum and its power output does not exceed 100 mW EIRP under any circumstances.

1.2.A.2 **Responsibility**: Teams are responsible for managing their robot communication. Spectrum availability is not guaranteed.

1.2.A.3 **Component Communication**: Communication between components of the same robot is permitted.

1.2.B Safety and Power Requirements

1.2.B.1 **Electrical Power**:

- Robots must not use mains electricity.
- Maximum allowed voltage: 48V DC or 25V AC RMS.
- Voltage must be easily measured during inspections, and measuring points must be covered for safety or designed with safety considerations in place.

1.2.B.2 **Battery Safety**:

- Lithium batteries must be stored in safety bags, and charging must be supervised by team members in competition areas.
- Teams must follow safety protocols, including battery fire handling and evacuation procedures.

1.2.B.3 **Robot Safety Design**:

- **Power Management**: Secure batteries, safe wiring, and emergency stop functionality.
- **Mechanical Safety**: No sharp edges, pinch points, or other hazards. Actuators must be appropriate for the robot's size and function.
- **Hazardous Behavior**: Teams must report potentially dangerous robot behaviors at least two weeks before the event.

1.3 Documentation and Sharing requirements

1.3.A RCJ Team Posters

1.3.A.1 **Purpose**: Posters are a tool for sharing robot designs and insights with judges, teams, and the public. Posters will be hung in public competition areas in the venue and digital copies or photographs will be shared by RCJ after the competition.

1.3.A.2 **Size**: Posters must be no larger than A1 size (60 x 84 cm).

1.3.A.3 **Content**: Posters should summarize design documents and present the robot's capabilities in an engaging format.

1.3.B Sharing Team Resources

1.3.B.1 **Sharing**: Materials submitted by teams as part of the documentation submission will be shared on GitHub repositories for the leagues: https://github.com/robocup-junior

1.3.B.2 **Credit**: Teams must credit creators of external work and adhere to licensing rules. The focus should remain on personal growth and learning.

1.3.C Plagiarism Guidelines

1.3.C.1 **External Code Use**: Teams are allowed to use external code but must credit the original creators.

1.3.C.2 **Learning Priority**: Teams should prioritize learning and not use complete solutions from others. Always pay attention to licensing rules.

1.4 Spirit and Behavior

1.4.A Behavior

1.4.A.1 All participants are expected to behave themselves and be considerate and polite especially but not only towards other participants, volunteers, referees and organizers of all Junior and Major Leagues as well as the host venue.

1.4.B Mentoring, Sponsorships and Component Reuse

1.4.B.1 Support from other teams, mentors, teachers, parents, sponsors, internet communities etc. is a core part of how teams learn and grow. To ensure fair competition and maximize learning it is required that none of the support they receive does the work of competing for the team. A good indication is the team's ability to explain not only what their robots' components do but also how they do it.

1.4.C Onsite help

1.4.C.1 Teams are only allowed to receive help from other teams during the competition. To this end only student team members are allowed into the student work area except with temporary organizer permission. Anyone else is forbidden from touching the robots or their code, especially for repairs, changes, programming.

1.4.D Violations

1.4.D.1 Teams that repeatedly conduct themselves in an unacceptable way may be disqualified from the tournament and asked to leave the venue.

2 Judging Overview

2.0.1 All teams are judged in the following areas: Poster, Interview, Open Technical Demonstration and OnStage Performance. Teams must highlight two of their robot(s) **features** in the work they present to the judges. Ask the following question - "What are you most proud of and what do you want to be judged on?" The features have to be of technical nature.

2.0.2 Teams should describe their two chosen features in the Poster. In addition, teams should demonstrate their understanding of their robots' in the Technical Interview and Open Technical Demonstration.

2.0.3 For clarification on a teams' features, please do not hesitate to reach out to the OnStage League committee using the RoboCupJunior Forum.

3 Performance (50% of total score)

3.0.1 The OnStage Performance is an opportunity to demonstrate the robot(s) through a performance or stage show.

3.0.2 Teams will present a live performance, in which their routine will be judged.

3.0.3 Teams are encouraged to be as creative and entertaining as they can.

3.1 Stage performance

3.1.1 The format of the competition will be announced before or during the team briefing. A standard competition consists of two performances.

3.1.2 The duration of the performance routine must be no less than 1:00 minute.

3.1.3 Each team has a total of seven minutes on the stage. This time includes stage set-up, introduction, performance routine and the time for clearing the stage.

3.1.4 If the time limit is exceeded due to circumstances outside the team's control (for example problems with starting the music) there will be no penalty. The judges have the final say on any time penalties.

3.1.5 Teams wait on the side of the stage before being welcomed on stage.

3.1.6 Teams are strongly encouraged to use the time while they are setting up on the stage to introduce to the audience the performance and the features of their robots.

3.1.7 Teams must indicate the start of their performance clearly with a "3-2-1" countdown to the judges.

3.1.8 Teams must indicate the end of their performance clearly once it's over (e.g. everyone coming to the front of the stage / thanking the audience for their attention / . . .).

3.2 Restarts

3.2.1 Teams can restart their routine if necessary, at the discretion of the judges. There is no limit on the number of restarts allowed within the stage-time. Penalty marks will be deducted from the score.

3.2.2 The team can restart without reentering the stage and with a clear countdown (3-2-1) to the judges.

3.2.3 Scores and deductions are reset to 0 after the team has requested a restart. Deductions for every restart will be applied at the end of the performance according to the scoresheet.

3.2.4 The team must leave the stage after their time on stage has expired.

3.2.5 Te restart must be clearly signaled verbally by a team member on stage.

3.3 Music and Multimedia presentations

3.3.1 Teams may use music or video to complement their performance.

3.3.2 If a team uses copyrighted music, they should follow the Copyright Law of the region where the event is held.

3.3.3 Teams are encouraged to provide a video or slideshow as part of their performance.

3.4 Stage

3.4.1 The size of the performance stage area is a rectangular area of 5 x 4 meters (m) for robots with the 5 meter side facing the judges.

3.4.2 The floor provided shall be made of a flat (non-glossy) white surface, for example, painted MDF (compressed wood fiber). While floor joints will be made to be as smooth as possible, robots must be prepared for irregularities of up to 5 mm in the floor surface. Whilst every effort will be made to make the stage flat, this may not be possible, and teams should be prepared to cope with this uncertainty.

3.5 Robots

3.5.1 Robots must perform autonomously.

3.5.2 Teams should construct their own robot rather than using the instructions that come with a commercial kit.

3.5.3 Teams are encouraged to **design costumes for their robot**. If a team wants to use a famous character as their robot, the team should pay attention to the copyright of the character.

3.6 Communication and Localization

3.6.1 Robots are encouraged to communicate with each other during the performance.

3.6.2 There must be no communication between off-stage and on-stage devices.

3.7 Scenery

3.7.1 Props are encouraged and can be used to add value to the performance.

3.7.2 Robots can sense static props to perform a certain task or trigger an action.

3.8 Robot Autonomy and Interaction

3.8.1 Robots may be started manually at the beginning of the performance.

3.8.2 During the performance, remote control of a robot is prohibited.

3.8.3 Interaction between robots and/or humans may be used to dynamically alter the robot's behavior. Robots that interact with their environment and respond accordingly will be highly rewarded.

3.9 Humans on stage

3.9.1 Human team members may perform with their robots on the stage during the performance. They should make sure not to hide important components of their robot performance from the judges/audience.

3.9.2 Humans may use the stage area to illustrate the robots movements through acting.

3.10 Deductions

3.10.1 Refer to the scoresheet for the list of deductions.

3.10.2 **All movements or interactions of and with robots that don't have any point of contact within the performance area** [1] will not be considered for the scoring, but will not lead to deductions.

3.10.3 **Robots started from outside the performance area will not be considered for judging during the whole performance.**

3.10.4 Teams reusing robots without informing the judges in any way will be subject to deductions.

3.11 Preprarations for the stage performance

3.11.1 It is the responsibility of the team to ensure that the music and video/presentation is playing correctly before their first performance by liaising with the RoboCupJunior OnStage officials.

3.12 Content

3.12.1 Performances should not include violent, military, threatening, or criminal elements. This includes inappropriate or offensive words (including music) and/or images.

3.13 Safety and Power Considerations

3.13.1 Participants should design their robot(s) to be a size that they can easily carry by themselves. Robots should be of a weight that team members can carry and lift onto the stage with ease.

3.13.2 To protect participants and comply with occupational health and safety regulations, routines may not include anything that could be considered a projectile, explosions, smoke, or flame, use of water, or any other hazardous substances (contact the committee when in doubt).

4 Interview (30% of total score)

4.0.1 The Technical Interview is a live interview between the team and the judges, in which all robots and programming are judged against technical criteria. Judges are interested in determining students' understanding of the robots they have developed.

4.1 Interview procedure

4.1.1 All teams will have up to 15 minutes of technical interview judging during the competition. Which will take place as an in-person meeting with the judges in a separate room at the venue.

4.1.2 Teams should have **all** robots present at the interview.

4.1.3 Teams should bring their programm code.

[1] In previous version this said "All movements or interactions that happen outside the performance area"

4.1.4 If the judges consider it necessary, teams may be asked to complete a second interview.

4.2 Translator

4.2.1 The Technical Interviews take place in the main language of the event. If teams require a translator, they should inform the RoboCupJunior OnStage officials prior to the event to allow translators to be organized.

4.2.2 Extra time will not be given for teams with a translator.

5 Poster (10% of total score)

5.0.1 Teams must submit a digital copy of their poster in PDF format ($\leq$ 10 MB).

5.0.2 Areas that are useful to be included in the poster are:

- team name and region
- performance description
- a description of the features that should be judged during the performance
- annotated pictures of the development process

5.0.3 If possible, teams will be given public space to display their Technical Poster.

6 Open Technical Demonstration (10% of total score)

6.0.1 Through the Open Technical Demonstration, teams should showcase their robots' capabilities and explain how they have been achieved.

6.0.2 It's recomended to use slides to introduce the project.

6.1 Demonstration procedure

6.1.1 The duration of the demonstration should be approximately 5 minutes.

6.1.2 Each team has a total of seven minutes on the stage. This time includes stage set-up, the demonstration, and the time for packing up and clearing the stage. The timer only stops when the entire stage is clear with no remnants from the previous demonstration.

6.1.3 After the seven minutes have expired the team will be asked to clear the stage and judging will be stopped.

6.1.4 Teams should showcase their robots' technical capabilities by both describing and demonstrating what has been developed. This could cover any aspect of the performance or technical capabilities of the robot(s), such as interaction with humans, interactions with other robots or the use of a particular sensor.

6.1.5 Teams are encouraged to remove robots' costumes for showing detailed design.

7 Judging

7.1 Judging criteria

7.1.1 The judging criteria and allocation of marks are provided in the respective score sheets.

7.1.2 Teams must read the Score Sheets carefully so that their robot performance covers as much judging criteria as possible.

7.2 Totaling

7.2.1 The total score of each team is calculated by combining the scores from the team's Interview, Poster, Open Technical Demonstartion and the Performance.

7.2.2 If more than one performance is scheduled, the highest of all performance scores will be used.

7.3 Judging panel

7.3.1 All aspects will be judged by a panel of at least three officials. At least one of these judges is a RoboCupJunior official who has judged the Technical interview and documentation as well.

8 Additional information

8.1 Rule Clarification

8.1.1 If any rule clarification is needed, please contact the International RoboCupJunior OnStage League Committee, using the Junior Forum (https://junior.forum.robocup.org). Once the inquiry is posted on this forum, OnStage League Committee members will respond as soon as possible.

Appendix A