

RoboCupJunior Dance Rules 2013

RoboCupJunior Dance Technical Committee 2013:

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These are the official rules for RoboCupJunior Dance event 2013. They are released by the RoboCupJunior Dance Technical Committee. These rules have priority over any translations.

Changes from 2012 rules are highlighted in red. **The rules, score sheets and awards have changed significantly for 2013 so teams should make sure they study the new score sheets.**

Preface:

Robot dance means that one or more robots and humans come together with music and moving in creative harmony. The following dance rules provide a framework on how to structure a human and robot dance performance routine.

Teams are advised that the main emphasis of this competition is on the technical aspects of the robot design and construction (including sensors and actuators) and the programming that creates the performance. The RoboCupJunior Dance Technical Committee would like to encourage teams to be creative, innovative and take risks in their use of technology and materials to create their performances.

1. PERFORMANCE

1.1. Kind of Performance

RoboCupJunior Dance allows teams to create a 1 to 2 minute creative stage performance using autonomous robots that the teams have designed, built and programmed. Teams can choose to create either a Dance or a Theatre performance.

'**Dance**' is a performance closely synchronized to the music. The robot(s) and humans are required to move in time to the beat or rhythm of the music selected in the same way that a human may listen to the beat of music and dance to it. The Dance assessment focuses on the choreography and movement of robot(s) and humans synchronization to music beats.

'**Theatre**' is a performance in which the robots tell a story or develop a theme supported by music. Theatre assessment is focused on the overall theatrical performance. The performance will be judged by how effectively the robot(s) are used to present a theatrical theme. **Examples: Nursery rhymes, movie-inspired performance, sporting theme, sustainability theme etc.**

The Dance/Theatre performance score sheet can be downloaded from the official RoboCupJunior website (<http://robocupjunior.org>). Teams are encouraged to refer to the score sheet when preparing their dance or theatre performances.

Before a RoboCupJunior event, the team must decide which is the most appropriate performance type so that judges can use the right score sheet to assess the performance. **The following are some guidelines that can help teams to make that decision:**

A dance performance will:

Use music as an integral part of the performance with deliberate, accurate and synchronised movements to music.

Use choreography of the robots to music as the focus of the performance.

A theatre performance will:

Use movement and music to create a performance that tells a story.

Music is used as background to supplement the performance.

Use a story as a focus of the performance.

Following a stage performance the judges may suggest a switch in the performance category of Dance or Theatre.

1.2. Duration

1.2.1. Each team will have a **total of 5 minutes** for their performance. This time includes stage performance set-up, introduction and the performance, including any re-starts due to factors under the teams' control. It does not include time needed for packing up and clearing the stage.

1.2.2. Following each performance, a team must fully tidy up the stage, pack up and remove any objects related to their performance. The performing team has a maximum of **one minute** to clear the stage after the end of their performance. **The maximum time onstage is therefore six minutes.**

1.2.3. The duration of a performance routine must be no less than 1 minute and no more than 2 minutes.

1.2.4. If a team exceeds the time limits explained in 1.2.1, 1.2.2 and 1.2.3 the team will be penalized by the loss of marks. A judge starts a stopwatch when a team member steps a foot on the stage for the maximum five minute period and following 1 minute to clear the stage. If the time limit is exceeded due to circumstances outside the team's control (for example problems with starting the music by the technicians) there will be no time penalty. The judges have the final say on any time penalties.

1.2.5. **Teams are strongly encouraged during the setup time to give an introduction that explains the robot technologies they used. Any format is acceptable for this introduction including video, slide-show or a team member talking etc. The introduction must be within the total time allocation for the performance.**

1.3. Music

1.3.1. Teams must provide their own audio music source. The preferred transport method is to place the sound file on a memory stick as a MP3 file. The memory stick should be clearly labelled with the team name and category (primary or secondary) and should hold only the MP3 file. It is essential that the music should be given to the RoboCupJunior officials acting as sound technicians before the team's practice period. Teams are encouraged to bring multiple copies of the audio source file.

1.3.2. Teams are strongly encouraged to bring a good quality audio music source file since their evaluation also depends on the music quality.

1.3.3. The music should start at the beginning of the audio music source with a few seconds of silent lead-time.

1.3.4. It is the responsibility of the team to ensure that the music is playing correctly before their first performance by liaising with the RoboCupJunior officials.

1.4. Human Team Members

1.4.1. Human team members are encouraged to perform with their robots. There is no penalty for humans not performing with their robots.

- 1.4.2. The only physical contact humans may have with their robots is to start the robot(s) at the beginning of a performance.
- 1.4.3. When **physical** contact between a human and a robot is a part of the performance this has to be discussed with and approved by the judges BEFORE the performance to ensure all the robotic performance is autonomous.
- 1.4.4. The maximum recommended number of 'human' members allowed on each team is 10; the minimum is 2. Any deviation from these numbers must be referred for adjudication to the Chief Judge before registration.
- 1.4.5. All team members must be the correct ages for the primary and secondary categories as state on the RCJ website <http://rcj.robocup.org/about.html> under "Ages".

1.5. Scenery and Presentations

- 1.5.1. Teams are encouraged to provide their own scenery.
- 1.5.2. Teams are encouraged to provide a visual or multimedia presentation as part of their performance. This can take the form of a video, animation, slide-show etc. Teams are encouraged to be creative in designing the presentation. Organizers will try their best to provide a projector and a projection screen for teams wishing to incorporate a presentation as part of their performance.
- 1.5.3. A certificate is awarded to the team with the "Best Creative Presentation". See also 4.6.
- 1.5.4. Teams should ensure that any presentation is being displayed correctly before their first performance by liaising with the RoboCupJunior officials.

1.6. Performance routine

- 1.6.1. Each team may perform one and only one Dance or Theatre performance routine. The same performance routine will be repeated if they proceed to the finals in their division. Some minor modifications (improvements) of the performance using the same music may be accepted. Any questions or concerns on performance and/or robot modifications at the venue should be discussed with the Chief Judge.
- 1.6.2. A RoboCupJunior official will start the music and the audio visual/multimedia presentation for the routine.
- 1.6.3. One human team member or several members using multiple robots and props may start each robot, either by hand or by remote control.
- 1.6.4. Teams are strongly encouraged to program their robot to begin the performance routine a few seconds after the music starts as it is extremely difficult to judge precisely when the music will sound after the audio source is started. Teams may find it useful to include a "beep" at the beginning of their music as a start signal.
- 1.6.5. Depending on the configuration of the dance stage and the sound system at the venue, it is possible that the human starting the robot will not be able to see the RoboCupJunior official starting the audio source; and vice versa. Teams should come prepared for these conditions.

1.7. Restarts

Teams are allowed to restart their routine if necessary, at the discretion of the officials. Unless a problem is not the fault of the team, any restart will result in a score penalty. There is no limit on the number of restarts a team can perform within their 5 minutes performance time. Team will be asked to leave the stage after 5 minutes.

1.8. Security & Safety

- 1.8.1. In order to protect participants, RoboCupJunior officials and bystanders, routines may not include explosions, smoke or flame, use of water, or any other hazardous substances.
- 1.8.2. Each team whose routine includes any situation that could be deemed hazardous, including the possibility of damaging the stage, must submit a report outlining the content of their dance routine to the chief judge BEFORE arriving at the competition. The Chief Judge may also request a demonstration of the activity before the stage performance. Teams not conforming to this rule may not be allowed to present their routine.
- 1.8.3. In no circumstances is mains electricity allowed to be used on stage. This includes the use of mains electricity for robots, scenery and props.

1.9. Content

Any performance that includes violent, military, threatening or criminal elements will be excluded. Any team using an inappropriate name or logo will also be excluded. Participants are asked to carefully consider the wording and messages communicated in any aspect of their performance. What seems acceptable to one group may be offensive to friends from a different country or culture.

1.10. Stage setup time

Teams are **strongly** encouraged to use the time whilst they are setting up the stage for their performance to introduce to the audience the features of their robots, technology used and highlights of the robotic performance and to introduce their team.

2. STAGE

2.1. Size

- 2.1.1. The size of the performance stage area will be marked in a rectangular area of 6 x 4 meters (m) for robots with the 6m side facing the judges. If the whole body of a robot (main body of robot not including any large extensions from the body) moves outside the marked boundary of the performance area the team will receive a penalty score. If in doubt please consult with the Chief Judge for clarification of "robot body" in relation to your robot design.
- 2.1.2. Human performers may be inside and outside the marked area.
- 2.1.3. The boundary of the performance stage area will be marked with a 50 millimetre (mm) black tape line, surrounded by a 20mm red tape line. This can also allow teams to use the black and red line tape boundary to program a robot to identify the performance stage area.

2.2. Surface

- 2.2.1. The floor provided shall be made of flat (non-glossy) white painted MDF (compressed wood fiber).
- 2.2.2. While floor joints will be taped to make them as smooth as possible, robots must be prepared for irregularities of up to 3 mm in the floor surface.
- 2.2.3. Teams are encouraged to practice on the same flooring type to have a better simulation for robot conditions and reduce the set-up time at the RoboCupJunior competition.

- 2.2.4. Whilst every effort will be made to make the stage flat this may not be possible in all venues. Teams should be prepared for some irregularities in the surface of the stage.

2.3. Stage environment

- 2.3.1. The RoboCupJunior organizers will endeavour to make variable lighting including spotlights available. Teams should not expect the performance stage area to necessarily be able to be darkened. We cannot guarantee direct or intense spotlights to be available. It is recommended that teams design their robots to cope with variations in lighting conditions, as lighting naturally varies from venue to venue. Teams should come prepared to calibrate their robots based on the lighting conditions at the venue.
- 2.3.2. Teams using compass sensors should be aware that metal components of the staging may affect the compass sensor readings. Teams should come prepared to calibrate such sensors based on the conditions at the venue.

2.4. Performance Stage Utilization

- 2.4.1. The main performance dance stage will be made available for teams to practice on. In fairness to all teams who may wish to practice, a booking sheet will be used to reserve the stage for a short practice time.
- 2.4.2. The last team to practice on this stage before performance time starts must fully clean up the stage and clear the stage area at least 3 minutes before the performance start time.

3. ROBOTS

3.1. Size

Robots may be of any size. Any robot(s) or prop(s) taller than 4 meters from the stage floor must be discussed with the judges and permission sought.

3.2. Number of robots

There may be any number of robots on a team. However, using multiple robots does not necessarily result in obtaining higher points.

3.3. Control

- 3.3.1. Robots must be controlled autonomously. No member of the team may make physical contact with the robot during its performance UNLESS it has been discussed and approved by the judges PRIOR to the performance.
- 3.3.2. Robots may be started manually by human contact or with remote control at the beginning of the performance. See also 1.6.3.

3.4. Robot technology

Any technology can be used to create the robots. Teams are encouraged to use the technologies creatively. Innovative or unusual use of technology (including sensors) is encouraged and will be rewarded. For example laptops, notebooks, mobile phones, tablets, Raspberry Pi and other similar devices MAY be used as robotic controllers but no mains power should be used while on stage. Teams are encouraged to use technology in unusual, innovative or inspired ways to create an engaging performance. If you are unsure whether the technology you are using is appropriate please contact the Chief Judge before the competition.

Costumes for robots and human performers are encouraged, and points will be awarded.

3.6. Communication

- 3.6.1. During the performance, any robot on stage may communicate with another robot on stage from the same team. There must be no communication with off-stage devices. **The source of communication must be infrared (IR), Ultrasonic, Bluetooth and ZigBee.** It is the teams' responsibility to be aware that their communication does not interfere with other teams' robots when practicing or performing. Teams with robot communication **MUST** explain the communication to the judges at the technical interview.
- 3.6.2. **No team is permitted to use radio frequency (RF) signals (like Wi-Fi or "radio control") as this may interfere with robots in other leagues. The only exception is the use of ZigBee. Take care to make sure you are not using any radio frequency signals as part of remote control of the robots; Teams have in advertently used radio frequencies in the past. If you are unsure please check with the Chief Judge before your performance.**

4. JUDGING

4.1. Scoring

- 4.1.1. The performance and technical score sheets can be downloaded from the official RoboCupJunior website (<http://robocupjunior.org>). Teams are encouraged to study the score sheets **in detail** in order to understand how they will be judged. The marks are allocated as follows:
- 50% of the marks - technical scoring which is undertaken by an interview.
 - 50% of the marks – performance scoring
- 4.1.2. There is a performance score sheet for marking the Dance and Theatre categories.
- 4.1.3. In the first round all teams will be given 2 opportunities to perform their performances before the judges. The highest performance score will be added to the technical interview score to calculate an overall score.
- 4.1.4. The top scoring teams from the first round will then be announced and asked to perform again in the final round. The performance scores for the teams in the final are "zeroed" at this point. The performance scores from the final round and the interview scores will be used to calculate the overall score for the teams in the final.

4.2. Authenticity and Originality

The performance is to be unique and have never been used in a RoboCupJunior dance competition in any previous years' rounds of regional, national or international competitions.

Teams who, in the opinion of the judges, have knowingly produced duplicate robots, costumes, props or performance movement (duplicate music is allowed) of another team or reused previous year's robots, costumes, props or performance of the same team will be subject to penalties. Penalties range from score reduction to a maximum penalty of exclusion from the competition. **Teams are encouraged to carefully check that all robots, props and costumes conform to these rules.**

4.3. Technical Creativity

The Dance challenge is intended to be very open-ended! Teams are encouraged to be as **technically** creative and entertaining as they can. Teams who show creativity and innovation will be rewarded with high point scores in the relevant sections.

4.4. Judging Categories

Stage performances and technical interview will be judged using the published score sheets. Teams are encouraged to study the score sheets during the preparation for their performance to maximize their scores.

4.5. Technical Interviews

- 4.5.1. All teams will have a 15 minute technical interview during the competition. It is strongly suggested for teams to **read the interview score sheets before the interview to make sure good use of the interview.**
- 4.5.2. Teams should ensure that they bring all their robots, props, posters, copies of the programs a completed Technical sheet and their poster. They should be prepared to demonstrate and discuss the use of all the sensors, electronics and technology that they have used. They should be prepared to demonstrate their robots and other technologies used.
- 4.5.3. A Robotic Dance Technical Sheet should be carefully completed by teams before they attend the competition and handed into to the dance organizing committee as soon as possible during the competition. The Robotic Dance Technical Sheet (as a document) will be posted online with the score sheets. The technical sheet is used to give teams the opportunity to explain the technical aspects of their robots to the judges. Teams are advised to study the Dance Interview Score sheet before they complete the technical sheets.
- 4.5.4. Interviews will take place in English, if teams require a translator they should inform the local organizing committee by e-mail prior to the event to allow translators to be organized.
- 4.5.5. If the judges consider it necessary teams that make it through to the finals may be asked to complete a second technical interview. If this occurs the score from the second technical interviews will be used to calculate the final score.

4.6. Prizes and Awards (Note: Rules 4.6.1 and 4.6.2 are not obligatory for national events)

- 4.6.1. Three prizes will be awarded in each age category (primary and secondary):

RoboCupJunior Dance Overall Prize is awarded to the team with the highest combined technical and performance scores in the final

RoboCupJunior Dance Technical Prize is awarded to the team with the highest technical score in the final round (excluding other winning teams)

RoboCupJunior Dance Performance Prize is awarded to the team with the highest performance (either theatre or dance) score in the final round (excluding other winning teams)

In the event of a draw in the marks the judge's discretion will be used to determine the winners.

- 4.6.2. Awards will also be given to individual teams in the following categories:

Robot Programming;

Robot Construction;

Use of Sensors;

Choreography;

Costume;

Entertainment Value;

Robot Electronics.

These awards will be awarded based on both the team performance and technical interview upon the discretion of the judges. Individual teams can receive only one award.

4.6.3. There will also be certificates awarded for the following categories:

Best Team Collegiality: This award goes to the team who, by popular vote, has given the greatest support to other teams – this support can be demonstrated in a number of ways, such as providing assistance with components, developing friendships and/or giving encouragement to other teams. The vote described in section 6.4.2 will be used for selecting the best Collegiality Award.

Best Poster: This award goes to the team who, at the discretion of the judges, has produced the best poster that describes the team and robot technology used. See also 5.2.

Best Creative Presentation: This award goes to the team who, at the discretion of the judges, has produced the most creative and technically interesting digital display that supports and enhances the robot performance. This could be a video, slide-show, images or any other form of digital product that is displayed during the performance.

Best Novice Team: This award goes to the primary and the secondary team placed highest in the competition overall and have not received another award, and where ALL members of the team are competing at RCJ international for the first time (this does not include a team having a team member(s) who has (have) competed in other RCJI categories).

4.6.4. No one team shall receive more than 3 prizes, awards and/or certificates excluding the Super team awards.

4.6.5. RoboCupJunior is an educational project. It is important that team members learn from their experiences with RCJI, and have the opportunity to improve in later years if they so choose. The organizers will provide feedback on each team's performance at the conclusion of competition. The sheet will indicate to the team their areas of strength and also areas needing improvement. It is important to note that these sheets are not to be used to debate positions, decisions or competition scores with the judges.

5. DOCUMENTATION

5.1. Authentication

All teams are encouraged to bring a poster display describing their preparation efforts including photographs of the different stages of robot development. The poster display must be presented during the interview, and may be called upon to help establish the authenticity of a teams' performance. Team should also complete the Robotic Dance Technical Sheet before the interview.

5.2. Poster Displays

5.2.1. Teams will be given some public space to display a poster board. The size of the poster should be no larger than A1 (60 x 84 cm). The poster should be brought along to the technical interview. After the interview the poster should be displayed in the location indicated.

5.2.2. The aim of the poster is to explain the technology used in the robots. Posters should be made in an interesting and entertaining format, as they will be viewed not only by the judges, but also by other teams and the visiting members of the public. The poster should provide information about the team and how you developed the robot(s).

Areas that need to be covered include: team name, division (primary or secondary), a picture of your team, your country and your location in your country, a little about the area you live in, pictures of the

robot(s) under development, and information about your robot technology. Include any interesting or unusual feature about the team, robot, your background or your entry.

5.2.3. A certificate will be awarded to the team with the most outstanding poster. Please refer to section 4.

6. CODE OF CONDUCT

6.1. Spirit

- 6.1.1. It is expected that all participants, students and mentors, will respect the RoboCupJunior mission. In addition, participants should keep in mind the values and goals of RoboCupJunior.
- 6.1.2. It is not whether you win or lose, but how much you learn that counts. You will really miss out on a lifelong learning experience if you don't take this opportunity to collaborate with students and mentors from all over the world. Remember this is a unique moment!

6.2. Fair Play

- 6.2.1. It is expected that the aim of all teams is to participate in a fair and clean competition.
- 6.2.2. Humans that may cause deliberate interference with robots or damage to the stage will be disqualified, if part of a team. If not part of a team they will be ask to leave the venue.
- 6.2.3. The team is responsible for removing all debris left from their routine that may interfere with the performance of subsequent activities.
- 6.2.4. Remember: Helping those in need and demonstrating friendship and cooperation are the spirit of RoboCupJunior as well as for making a better world.

6.3. Sharing

- 6.3.1. It is understood that RCJI events with rich technological and curricular developments should be shared with other participants after the competition.
- 6.3.2. Any developments may be published on the RoboCupJunior Web site following the event.
- 6.3.3. Sharing information furthers the mission of RoboCupJunior as an educational initiative.

6.4. Collegiality

- 6.4.1. In keeping with the spirit and collegiality aspects of RCJI, a party will be provided by the organizers for all team members, mentors and supporters. It is strongly requested that all such individuals delay their departure sufficiently to attend, even if the party is held after the finals and prize giving ceremony. The organizers request all team members bring business-sized cards to share with other teams at the party. These cards could include the team name, its members' name(s) and contact details, so students can remain in contact with each other after the event. This is optional, but encouraged. It is also requested, but not compulsory, for team members to wear either national dress, or some icon that identifies them with their country. This can be done in a humorous manner, such as an animal mascot from their country or another creative idea.
- 6.4.2. Each participating team will have one vote to nominate the team that displayed the greatest cooperative interactions and shared support with other teams. Please refer to section 4 for Collegiality Award.

- 6.5.1. All movement and behavior is to be of a subdued nature within the event venue.
- 6.5.2. Competitors are not to enter set-up areas of other leagues or other teams, unless expressly invited to do so by other team members.
- 6.5.3. Participants who misbehave may be asked to leave the building and risk being disqualified from the event.

6.6. Mentors

- 6.6.1. Mentors (defined as teachers, parents, chaperones, translator or any other non team-member) are not allowed in the student work area except to assist carrying equipment in or out of the area as teams on the arrival and departure days.
- 6.6.2. If a problem is encountered with a computer or other device that is clearly beyond the reasonable ability level of a student to repair, a mentor may request permission from the organizers to enter the work area for the sole purpose of advising on that repair. They must leave the work area immediately after this is completed. Rule 6.6.1 still applies at these times.
- 6.6.3. Mentors are not allowed to set up such equipment on stage, as this should be the responsibility of team members. Organizers will assign volunteers to teams that need an assistant for stage set-up. Teams should request this assistance to the officials.
- 6.6.4. A mentor found in the student work area without an acceptable reason may lose his/her access to the venue and the team marks will be penalized.
- 6.6.5. **A mentor found to be involved with mending, building or programming the robot(s) and/or directing choreography may lose his/her access to the venue and the team marks will be penalized. This applies to both the "individual" and "super team" competitions.**

6.7. RoboCupJunior Officials

- 6.7.1. The referees and officials will act within the spirit of the event.
- 6.7.2. Interviews will be judged by at least two RoboCupJunior officials. Stage performances will be judged by a panel of at least three officials. One of the performance judges is a RoboCupJunior official who judges the interview as well.
- 6.7.3. The RoboCupJunior officials shall not have close relationship with any of the teams in the age-group they judge.

6.8. Information about the event

- 6.8.1. Teams will be responsible for checking the updated information during the event. The updated information will be provided on notice boards in the venue and (if possible) on the RoboCupJunior website. The information will be announced at the beginning of the event and will be posted on the notice boards as well.
- 6.8.2. Newsletters will be disseminated during the event to ensure teams and mentors have the latest information.
- 6.8.3. Queries regarding the rules or their interpretation may be sent to the Chairman of the Technical Committee for Dance, Nicky Hughes (UK) at n.a.hughes@btinternet.com.