RoboCupJunior CoSpace Dance Rules

RoboCupJunior CoSpace Technical Committee 2013:
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This document contains the official rules for RoboCupJunior CoSpace Dance 2013, and is released by the RoboCupJunior CoSpace Technical Committee. The rules contained in this document have priority over any translations. Differences between the RoboCupJunior CoSpace Theatre (Demo) 2012 rules.

Preface

CoSpace Dance involves interactions between human and both real & virtual robots dressed in costume to tell a story or dance to music in a creative way in both real and virtual-worlds – Co-Existent Space. The focus of the performance is to deliver a **story or dance performance** using CoSpace robots. A communication between real and virtual robots is required to perform a task in both real and virtual environments.

1 PERFORMANCE

1.1 Kind of Performance

1.1.1 RoboCupJunior CoSpace Dance allows teams to create a 1 to 2 minute creative stage performance using autonomous real robots, virtual robots and 3D virtual environment that teams have designed, built and programmed. The CoSpace Dance has to focus on the delivery of dance performance or a story using CoSpace robots. **We welcome both dance and drama team**.

1.1.2 In CoSpace Dance, teams are required to build real robots, set-up the real environment (props), design virtual robots and virtual environment using 3D objects. It is a requirement to establish communications between the real world (real robots and real environment if possible) and the virtual world (virtual robots and virtual environment) wirelessly using Bluetooth or ZigBee. Virtual robots and items in the virtual environment should react accordingly once they receive a signal from real robots. At the same time, the real robot or items in the real environment have to react based on the communication signal of the virtual robot and virtual environment.

1.1.3 You may also add video to the virtual environment to enhance the overall setup.

1.1.4 There are two score sheets for CoSpace Dance, namely interview score sheet and performance score sheet. Both can be downloaded from the official RoboCupJunior website (http://robocupjunior.org). Teams are encouraged to use the score sheets when preparing their CoSpace Dance performance.

1.2 Duration

1.2.1 Each team will have a total of 5 minutes for their presentation. This time includes stage performance set-up, introduction and the performance, including any re-starts due to factors under the team's control. It does not include the 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 1 minute to clear the stage after the end of their performance.

1.2.3 The duration of a performance routine must be more than 1 minute and less than 2 minutes.

1.2.4 If a team exceeds the time limits as explained in 1.2.1, 1.2.2 and 1.2.3 with their own fault, 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 5 minutes 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 projector) there will be no time penalty. The judges will have the final decision on any time penalties.

1.3 Music and 3D Virtual Environment

1.3.1 Music must be embedded in the virtual environment. You may have more than one piece of music for the entire routine to enhance the performance.

1.3.2 Teams are strongly encouraged to use a good quality audio and video source.

1.3.3 Teams need to build the 3D virtual environment on their own PC/laptop. They need to connect their own PC/laptop to the AV console and play the virtual scenery during the competition. It is strongly recommended for teams to try the connection PRIOR to the actual performance.

1.4 Human Team Members

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

1.4.2 The only physical contacts humans can have with their real robots are:

- to start the real robot(s) at the beginning of a performance.
- when the physical contact is a part of the performance (This has to be discussed with and approved by the judges PRIOR to the performance).

1.4.3 All team members must be the correct ages for the primary and secondary categories as stated on the RCJ website http://rcj.robocup.org/about.html under "Ages".

1.5 Scenery

1.5.1 Real scenery:
Teams are encouraged to provide their own scenery on stage.

1.5.2 Virtual scenery (3D virtual environment)
Teams are required to design virtual scenery. The virtual scenery may include virtual 3D objects (buildings, trees, etc.), virtual video display, etc. that suit the story, theme or the music of the performance. The virtual environment will be projected on the backdrop screen as an extension of the real world. Organizers will provide a projector and projection screen for teams to incorporate the virtual environment as well as virtual robots as part of the CoSpace Dance performance.

1.6 Performance Routine

1.6.1 Each team may perform one and only one Theatre or Dance performance routine. The same performance routine will be repeated if they proceed to the finals. Some minor modifications (improvements) of the performance using the same story/music may be accepted. Any questions or concerns on performances and/or robot modifications at the venue should be discussed with the Chief Judge.

1.6.2 One of the team members has to start the 3D virtual environment for the routine.

1.6.3 One human team member or several members, for a team with multiple real robots and props, can start each real robot, either by hand or remote control. Teams are strongly encouraged to program their real robots to begin the performance routine a few second after the music starts

as it is extremely difficult to judge precisely when the music will sound after the audio source is started.

1.7 Restarts and Retakes

1.7.1 A team can request a restart of their routine if necessary. It will be granted to the team 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 of performance time. The team will be asked to leave the stage after 5 minutes.

1.8 Security and Safety

1.8.1 In order to protect participants, RoboCupJunior officials and bystanders, routines may not include real explosions, smoke or flame, use of water, or any other hazardous substances. (All extraordinary effects can be added in the virtual environment if teams wish to do so). 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 performance routine to the Chief Judge BEFORE the competition. Teams not conforming to this rule may not be allowed to present their routine.

1.8.2 Mains electricity is NOT allowed, under ANY circumstances, to be used on stage. This includes the use of mains electricity for robots, scenery and props.

1.9 Content

1.9.1 Any presentation 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 their presentations. What seems acceptable to one group may be offensive to friends from a different country or culture.

1.10 Stage Setup Time

1.10.1 Teams are 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 for real robots with the 6m side facing the judges. If the whole body of a real 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 millimeter (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 real robot to identify the performance stage area.

2.2 Surface

2.2.1 The stage floor provided shall be made of flat (non-glossy) white painted MDF (compressed wood fibre).

2.2.2 While floor joints will be taped to make them as smooth as possible, real 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 (RCJI).

2.3 Lighting

2.3.1 The RoboCupJunior organizers will endeavor 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 real robots to cope with variations in lighting conditions, as lighting naturally varies from venue to venue. Teams should come prepared to calibrate their real robots based on the lighting 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

There will be two types of robots – real and virtual robots.

3.1 Size

3.1.1 Real Robots:

Real Robots may be of any size. Any props should not distract the audience view of the backdrop for the virtual robots and environment projection. Any real robot(s) taller than 4 meters from the stage floor must be discussed with the judges and permission sought.

3.1.2 Virtual Robots:

Virtual Robots may be of any size and any design. For example, the virtual robot(s) can be designed as a car, a track, a Barbie, a spider-man, etc. The virtual robots should move and act in the virtual environment.

3.2 Team

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

3.3 Control

3.3.1 Both real and virtual robots must be autonomous. During a performance, real robots must also be 'wirefree' in that they must not be connected to a computer or other devices including power sources. No member of the team may make physical contact with the real robot during its performance UNLESS it has been discussed and approved by the judges PRIOR to the performance.

3.3.2 Real robots may be started manually by human contact or with a remote control at the beginning of the performance. Virtual robots may start automatically according to the sequence of the performance. See also 1.6.3.

3.4 Robot Technology

3.4.1 Any technology can be used to create the robots. Teams are encouraged to use the technologies creatively. Teams are encouraged to use technology in unusual, innovative or inspired ways to create an engaging performance. Points will be awarded. If you are unsure whether the technology you are using is appropriate please contact the Chief Judge before the competition.

3.5 Costumes

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

3.6 Communication

3.6.1 Communication between real robots

During the performance, any real robot may communicate with another real robot. The communication mode must be Bluetooth or ZigBee.

3.6.2 Communication between real robots and virtual robots
During the performance, any real robot may communicate with any virtual robot. The communication mode must be Bluetooth or ZigBee.

3.6.3 Interaction and Communication between virtual robots
During the performance, virtual robots can communicate with each other via programming.

3.6.4 It is the teams' responsibility to make sure that their communication does not interfere with other teams' robots when practicing or performing. No team is permitted to use radio frequency (RF) signals like WLAN wireless communication, as this may interfere with robots in other leagues. Teams with robot communication MUST explain the device as well as the program to the judges at the interview.

4 JUDGING

The CoSpace Dance score and technical sheets can be downloaded from the official RoboCupJunior website (http://rcj.robocup.org/dance.html).

4.1 Authenticity and Originality

4.1.1 All teams are asked to present their real robots, props and virtual environment with virtual robots in an interview. Each team's overall score will be decided by the total of their BEST performance and their interview score.

4.1.2 The performance is to be unique. Teams who, in the opinion of the judges, have knowingly produced duplicate robots, costume or performance movement (duplicate music is allowed) of another team or reused previous year's robots of the same team will be interviewed by a panel of three judges. Penalties range from score reduction to a maximum penalty of exclusion from the competition.

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 Creativity

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

4.3 Judging Categories

4.3.1 Technical interviews and stage performances will be judged using the published score sheets. Each of the judging categories may be weighted differently. The performance and technical score sheets can be downloaded from the official RoboCupJunior website whttp://robocupjunior.org). Teams are encouraged to study the score sheets ***in detail*** in order to understand how they will be judged.

4.3.2 Technical Interviews

(a) All teams will have a 20 minute technical interview before their performance.

(b) Teams should ensure that they bring all their robots, props and copies of the programs and documentation of their work (journal, log-book, etc.) to their technical interview. Teams should also present virtual robots, props and virtual environment in the interview. They

should be prepared to demonstrate the sensors, electronics, real/virtual communication and technology that they have used.

(c) A Technical Sheet should be completed by teams and presented to the CoSpace organizing committee during interview.

(d) 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.

(e) If the schedule allows, teams that make it through to the finals may be asked to have a second technical interview.

4.3.3 Stage Performance

Stage performances will be judged according to the following categories:

(a) Real world setup including real robots, robot costumes, stage props, creative use of sensors and stage arrangement. The real robots should have solid construction, components should not fall off, and Robots movement should be smooth and controlled. Sensors should be used effectively (eg. to trigger different parts of the program, for detection of boundary line, etc). The motorized props, static display, back drops, lighting effect, or any special effect should enhance the performance. Costumes should be appropriate, innovative, well made and complement the performance.

(b) Virtual and real world communication
Three types of communication will be assessed. They are communication between robots/entities within the virtual world, communications between real and virtual robots/entities which is initiated by the virtual robots/entities, and communications between real and virtual robots/entities which is initiated by the real robots/entities,

(c) Choreography
Creative performance presented

(d) Entertainment value
Human, real robots, real props, virtual robots, and virtual environment contributed to communicate the theme and enrich the performance. The overall performance should be entertaining, exciting, and enjoyable and will successful convey the story or theme.

(e) Virtual robot and 3D environment design
Virtual robots should be designed to fit into the theme or music well. 3D Virtual environment including various interactive digital media activities enhances the overall performance.

4.4 Awards

The following awards are determined by combining the interview and their best final performance score.

4.4.1 CoSpace Dance Champions will be awarded to the team that achieves the highest overall total score.

4.4.2 Best Real Robots Design will be awarded to the team who designed the best real robot(s) including construction, programming and performance.

4.4.3 Awards will also be given to individual teams in the following categories:

- Best Virtual Space Design will be awarded to the team who designed the best virtual robots and virtual environment.
- Best Choreography and Cinematography will be awarded to the team who produces the best choreographed theatre or dance performance

- Best Entertainment Value will be awarded to the team who delivered the most entertaining performance.

4.4.4 There will also be certificates awarded for the following categories:

- Novice Team will be awarded to the best overall team in which all teams members are participating in CoSpace Dance at the first time.
- Best Presentation Award will be awarded to the most outstanding presentation. This award will be judged according the the technical interview presentation and poster design.

Note: 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 by providing a modified score sheet to each team captain after presentations are made at the conclusion of competition. The sheet will indicate to the team their areas of strength and also areas needing improvement, as rated by the event judges. 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

5.1.1 All teams are encouraged to bring paper or digital documentation describing their preparation efforts including photographs of the different stages of robot development. The documentation should be no more than 5 pages (A4 size) and contains a brief description of the development of real/virtual robots, including programming, 3D virtual environment, and photos. The documentation 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 Technical Sheet before the interview. See Interview Score Sheet for more details.

5.2 Presentation Displays

5.2.1 Teams will be given a public space to display their materials on a poster board. Since the available space could be limited, teams are encouraged to bring some kind of electronic presentation in Power Point and/or other electronic format that can be displayed in the venue. The organizers will provide screening equipment. The size of the area available for a team's presentation will be announced prior to the event.

5.2.2 Posters or electronic presentations should be made in an interesting and entertaining format, as they will be viewed not only by the judges, but by other teams and the visiting members of the public. The presentation should provide information about the team and how you prepared for the international event. Areas that need to be covered include: team name, division (primary or secondary), team members' names (and perhaps a picture of the team members), your country, your location in your country, a little about your district and school, pictures of the real/virtual robots and virtual environment under development, and information about your dance performance and team. Include any interesting or unusual feature about the team, robot, your background or your entry A prize will be awarded to the team with the most outstanding presentation. (See 4.4.7 for Presentation Award)

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 asked 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 RoboCupJunior International 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 RoboCupJunior International, 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 presentations. 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.

6.5 Behaviour

6.5.1 All movement and behaviour 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 (teachers, parents, chaperones, translators, and other adult team-members) are not allowed in the student work area, except to assist carrying equipment in or out of the area on team’s arrival or departure day.

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 attending to 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.

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 the RoboCupJunior official who judges the interview as well.

6.7.3 The officials shall not have close relationship with any of the teams participating in the CoSpace Dance performance.

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 possibly on the RoboCup International 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 Queries regarding these rules or their interpretation may be sent to the CoSpace Technical Committee, Shen Jiayao (Singapore), at jyshen@sp.edu.sg .

CoSpace Robot Home Page: www.CoSpaceRobot.org