RoboCup Junior Tasmania

Guide to Dance

2009

Your task is to entertain, delight and thrill the audience. We expect your robot to be decorated and dressed to please. The challenge is intended to be as open ended as you choose to make it.

In RoboCup Junior Australia (RCJA) Dance, the challenge is to design a robot (or team of robots) to dance to music for a minimum of one minute and not more than two minutes, within a defined 3m x 3m dance floor.

This Guide is provided by Robotics Tasmania to help teams prepare for the RoboCup Junior Tasmanian (RCJT) Dance competition. It summarises, but is not intended to replace the official RCJA Dance Rules (see www.robocupjunior.org.au for the rules).

Note: An asterisk (*) indicates a modification of the national RCJA rules to suit the Tasmanian competition.

The Team

Team members: Dance teams consist of human team members (in either the Junior or Senior divisions depending on their age) and their robots.

Two different categories have been introduced this year – Dance and Dance Theatre.

- **Dance Theatre** is focussed on the overall theatrical presentation and can include any number of robots per team.
- **Dance** is focused on the choreography and movement of the robots and is limited to a maximum of 2 robots per team.

Junior division: Students that are 12 years of age, or under, are eligible to compete in the Junior age division.

Senior division: Students 13 to 18 years of age are eligible to compete in the Senior age division.

Captain*: Before the performance, teams should designate one human to act as 'Team Captain'.

Competing in multiple events*: Although your team is welcome to register and compete in more than one event, please be aware that finals may run concurrently. Consequently, you must have enough robots and team members to cover all events. Teams may only compete in one Dance event (ie. They can't compete in both Dance and Dance Theatre).

For example, to enter both Dance and Soccer, a team must have at least three robots and at least two human team members.

The Robot(s)

Robots: There is no limit to the number of robots used in Dance Theatre, but a limit of two robots in Dance. Robots can be of any size or number of motors, microprocessors or sensors.

Construction*: Any commercial robot kit or raw hardware may be used as long as the design and construction are substantially the original work of the student(s).

Remote control: No remote control devices, computers, mobile phones, Bluetooth devices, or IR-emitting devices apart from the robots themselves are permitted within 5 metres of the performance area. A team using a micro-processor such as an RCX may use another RCX programmed to 'mail' a specific number to their dance robot to begin their performance.

Users of other systems may be required to convince a Technical Scrutineer that a remote-starting system will not interfere with other teams' robots.

Competitors using the Lego RCX are advised to mask/shield their RCX infra-red window to prevent their program being corrupted (black electricians' tape works well). Competitors are reminded that the LEGO infra-red tower has a range of about 3m. It is the responsibility of the participants to ensure that IR power is turned to 'low' and the tower is shielded to reduce stray emissions.

Performance area

Dance floor surface: The floor of the performance area is a 3 x 3m surface of unpainted MDF.

While every effort will be made to provide a flat, smooth surface, robots should be designed to cope with edge joints and variations up to 3mm in height. Teams intending to use the standard performance area are encouraged to practice using such a surface.

Teams may provide their own floor surface for the performance area, as long as such flooring fits within the 3 x 3m boundary. This surface may be marked or decorated.

*Teams may not in any way damage the dance surface in their performance, and must ensure that all props are removed at the end of their performance.

Boundary markings: The 3 x 3m dance floor will be marked on the MDF sheeting with a line of 50mm reflective aluminium foil tape. A second line of approximately 20mm tape of a contrasting colour (e.g. red electrical tape) fitted around the immediate outside of the foil tape.

Teams are encouraged to use sensors to prevent their robot from leaving the dance area, and will lose points when a robot moves out of the marked dance floor.

The Interview

Interview: Prior to the performance, each team will be required to attend a 10-minute interview to discuss their entry. Judges will allocate points to the team based on their answers to interview questions about the development of their robots.

Teams should come to the interview prepared with their program viewable on a laptop, a record of the development of their entry such as a journal or logbook, and their robots.

*Teams with greater than 6 members must allocate 6 team members to be interviewed.

Interview schedule: Teams will need to check the schedule of interview times at the venue to ensure they are ready at the interview area at the correct time.

Interview questions: Interviewers will ask the teams to describe their entry and explain the programs they have written for it. Questions will cover teamwork, problem solving and the design and development of both the robots and their programs. Points will be given for providing some form of learning journal or logbook, that shows the evolution of their entry and confirms it as being the team's own work.

The Performance

Music*: Teams are required to provide the music for their performance (as either an mp3 CD or audio CD – flash drives will not be accepted) to the registration desk as they arrive. Teams should also keep a spare copy with them. Music must be labelled with the team name, school, and title of music.

Music must not be of a suggestive, offensive, violent, vulgar, discriminatory, or prejudicial as decided by the judges.

Preliminary round: Preliminary performances will begin with the Junior section.

Performance schedule: Teams will need to check the schedule of performance times at the venue to ensure they are ready at the dance floor at the correct time.

Starting the dance*: The Team Captain will signal to the Judges when the team is ready to begin their dance. When the Judges are also ready, the Team Captain will signal to the music desk to start.

Length of performance: The total performance time allowed per team is 6 minutes. This includes initial set-up, the dance of 1 to 2 minutes, any restarts, and clean up (see below).

***Due to time constraints and a growing number of participants, 2 marks will be deducted from the performance score for every full minute the team runs beyond 6 minutes**

Restarts: If the robot experiences a mechanical or programming malfunction, the Team Captain must request a re-start immediately by signaling clearly to the Judges.

Finals: Once the results of the preliminary rounds have been determined, finalists from each division will be invited to repeat their performances to determine the finals places.

If the performance has been going for more than one minute, no restart is permitted. No more than two restarts are allowed.

Scoring*

There are two parts to the Dance competition: An Interview and the Performance, both parts contribute points to the team's score.

*The Dance Performance and Interview scoresheets (see below) provide explicit details about the criteria used for scoring Dance entries and should be considered carefully in planning your entry.

The RCJT Dance Interview scoresheet, found at the end of this guide, differs from those used in the National RoboCup Jnr competition. Please keep these differences in mind when preparing your entry.

Code of conduct

The aim of RoboCup Junior is to create an entertaining and educational experience that will continue into the future. To achieve this we all must create a spirit of collaboration, and not just competition. It is hoped that all entrants respect this aim.

Behaviour: All movement and behaviour at the event is to be of a subdued nature. Competitors are not to enter setup areas of other teams unless expressly invited to do so.

Mentors: Mentors are not to repair robots or be involved in programming of students' robots.

Sharing: It is an understanding of world RoboCup competitions that any technological and curricular developments should be shared with other participants after the event.

Resources and acknowledgements

RoboCup Junior Tasmania (www.roboticstasmania.com.au).

For the official rules, please visit the RoboCup Junior Australia web site (www.robocupjunior.org.au).

This Guide was prepared by Tiani Pilgrim. It is based on the RoboCup Junior Australia Dance Rules 2009 by RoboCup Junior Australia.

RoboCup Junior Tasmania 2009 - Dance
INTERVIEW

Team Name: _____ School: _____	(tick one) PRIMARY SECONDARY	TEAM ID: JUDGE ID:

Robot Design & Construction **The appearance and construction of the robot shows…**	**TOTALS**
Design & construction was largely students' own. (Commercial robot = 0, commercial kit = 1-2, hand-built = 3-4)	/4
Design & construction resulted in a stable build.	/2
Gearing, linkages, pivots, (other non-basic features) used in design and drive mechanisms.* (e.g. reward design for complexity IF it aids movement)	/4
Students successfully addressed problems of robot balance and structural soundness in design in dance application. (e.g. how did you stop x from becoming loose during the performance? What have you done to prevent your robot(s) breaking if they fall?)	/4
Evidence of authenticity and evolution.* (Logbook, journal, photographic record or similar provided to convey ideas tried and discarded, progressive evolution of students' design and original ideas.)	/4
TOTAL	**/18**

Programming and Preparation **Through experience, research and teamwork the team shows:**	
They can explain, describe and understand their program thoroughly.* (e.g. what does this section of program tell the robot to do? If I changed this part to become x, what effect would that have on the robot?)	/6
Complex, innovative or original programming used or programming level appropriate to age and expertise level. (e.g. use of jumps/lands, loops, nested sections, blocks, switch statements, creation of own icons or sequences, etc)	/4
They are able to explain connections between the program and music selected.* (e.g. How do you get your robot to synchronise to the music chosen?)	/2
Did they learn from their experience in preparing for the competition?	/2
Did they share their learning with others? (e.g. How did you work as a team? Share the tasks? How did you make decisions? If only one member of the team, what did you do to share your learning with others?)	/2
TOTAL	**/16**

Sensors & Technology **Robot shows…**	
Use of sensors &/or communication.* (e.g. programming to respond to sensors, use of sensors to trigger next part of performance, evidence of programming to keep the robot within the stage boundaries, effectiveness of sensors used, use of communication between robots to assist location, timing, etc)	/4
Use of other technologies.* (e.g. use of unusual technologies such as infra-red, sonar, compass, in-built timer to monitor duration of performance, etc)	/2
TOTAL	**/6**

Note: An asterisk (*) indicates a modification of the national RCJA scoring to suit the Tasmanian competition.

TOTAL SCORE /40