

# Robocup Junior Dance & Theatre

## Hints and Tips

The first step for every team should always be to study the RULES. There may be changes each year.

Download the current version from the website. [www.robocupjunior.org.au](http://www.robocupjunior.org.au)

Check your State section for any Local rule changes.

Review the differences between **Dance & Theatre** and choose your team's preference.

Download the Interview and Performance Scoresheets and print them for reference.

### Music:

- Choose music with a good beat to time your robot's movement to.
- Songs with clear differences between verse and chorus allow you to change your robot's actions to events in the song.
- Use a program like "Audacity"(free download) to help you break down the timing of your music.  
Verse=\_\_\_\_\_sec, Chorus=\_\_\_\_\_sec, 1 beat = 4 beats=
- Document the timing with the events and their times detailed. Refer to this often when writing your programs to keep your robot in time with the music.(Dance)
- With your choice of music in mind, plan an overall theme for you performance that allows you to incorporate props, backgrounds or costumes.(Especially important in Theatre)
- Plan to start your robot after your music has begun. Have your program running but waiting for a sensor to be triggered by you on the correct beat of the song to get your robot moving in time with the music.
- Most songs are longer than the two minute maximum. You can use software to edit the length of the song for your performance before you burn it to CD or save the mp3 file.
- Have your music saved in the correct format for your event . Find out whether it needs to be on CD, a file on USB or uploaded prior to the event. Make sure it is edited and saved the way you want it to play on the day. Keep a second copy safe with you for competition day .

### Robot Design and Programming :

- Study and refer to the Performance and Interview score sheets when planning your robot design and performance.
- Ensure your robot build is stable and well braced. Make sure it won't fall apart when transported or moved around at the competition.
- Experiment with different movements that your robot can make, and then work on fitting them in with the timing of your song.
- Use Loops within your program to repeat small behaviours. Eg: Spin Left, Spin Right looped 4 times to "shimmy". Look at creating sub routines or "My Blocks" for behaviours that you want to repeat at different points of the program.
- Save your programs often and keep more than one version. Adding a date on to the end of a program name and saving it as a new version each session will allow you to go back to older versions if you start having problems with a current version. This is especially useful if you have your program crash! Dance programs can be very long and prone to crashing.

- Experiment with using an extra motor to add interesting movement to your robot. Your own original design is highly desirable compared to using standard building instructions. Ensure that additions are well braced for reliability. Examples: Wagging tails, waving hands, nodding heads.
- Plan on having your robot move to cover a large area on the 3m x 3m floor. Work out how your robot will know where it is within the area. Dead reckoning? Sensors?
- If using dead reckoning, make sure you start your robot in exactly the same position each time. Find (or make) a reference point to line it up with. Starting in a slightly different position or at a slightly different angle will mean your robot can end up in a completely different part of the floor by the time it has completed some moves! (This is when it can run out of the boundaries!) Errors in position can also occur if wheels “spin” with fast takeoffs. In NXT-G checking the Next action and setting it to “brake” rather than “coast” on a move block can help stop errors compounding by stopping forward momentum. Practising on surfaces that have more resistance than a smooth floor can also make a difference to turns and distance travelled if tires grip on one surface and slip on another.
- Test the difference that the battery power can have on the distances your robot moves on the dance floor, especially if using “time” as your motors duration. Take this in to account for your competition performance.
- If using Sensors ensure that you know how to calibrate them for the conditions on Competition day. For light sensors, the competition area may have different ambient light conditions than where you have been practicing. There also may be uneven lighting over the performance area, so ensure your sensors are shielded or positioned to cope with this. For sound sensors, the competition area may be noisier than where you have been practising. You will need to reset Threshold (trigger) values on the day, or write a calibration subroutine in to your program (advanced).
- Make sure you practise with any costumes on your robots. Make sure the that the costumes don’t get in the way of moving parts, and allow for extra power in your program if the costume adds weight to your robot.
- **Aim for reliability in your performance. You may only have one opportunity to display all of your hard work! Make sure you have practised and identified all that can go wrong. Work on “ironing out” problems before competition day.**

#### Journal (Log Book) & Interview:

- Print out your programs to show the interview judge. This means you won’t have problems if you can’t get your computer to boot and open the program at the interview.
- Make sure you can explain your program thoroughly. Comment on your programs as you write them to help remind you of what each section does.
- Take photos of your robot as your design develops to include in your journal.
- Document your ideas & designs. Identify problems and how you overcame them for your journal.
- Use the interview score sheet as a guide and practise explaining the design of your robot and details of your program to someone. The interview is where you get to show people your understanding and point out the cool features of your entry.