



RoboCup Junior Australia

2004 Premier Rescue Rules

Introduction

Someone has sent a distress call asking for a rescue. The victim has fallen into a swamp. Your team's mission is to design, build and program a robot to rescue the victim as quickly as possible.

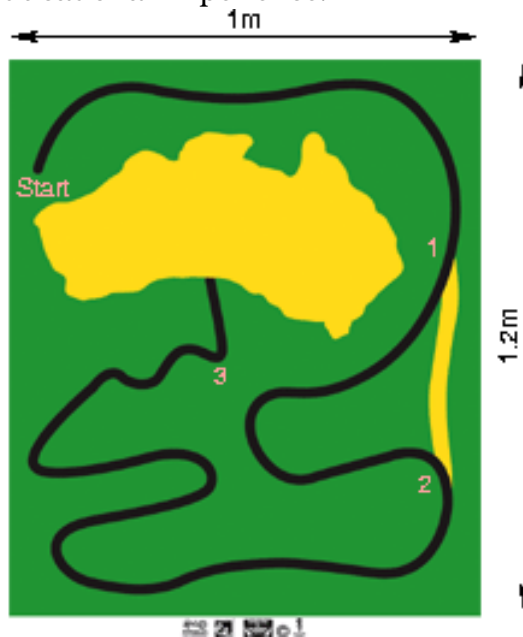
The swamp can only be found by following the road. The robot should find the swamp, locate and rescue the victim, by collecting and returning with the victim to the start.

You have 90 seconds to complete the mission.

1 The Playing Field

1.1 The Floor

1.1.1 The RoboCup Junior Australia Official Rescue Field is printed and commercially available through Educational Experience.



1.2 Lighting

1.2.1 Teams must come prepared to calibrate their robots based on the lighting conditions available at the venue.

1.2.2 Every effort will be made to keep ambient light to a low level with infra-red (IR) sources from incandescent lights and natural lighting minimised.

1.3 Magnetic Conditions

1.3.1 Every effort will be made to locate rescue fields away from magnetic fields such as under the floor wiring and metallic objects. However sometimes this cannot be avoided.

It is recommended that teams design their robots to cope with variations in lighting and magnetic conditions, as these vary from venue to venue. Teams should come prepared to calibrate their robots based on the conditions at the venue.

2 Robots

2.1 Diameter

2.1.1 The robot must fit within a 270mm diameter cylinder.

2.1.2 The robot must be upright in its normal running position.

2.1.3 The robot must be fully extended. (see section [4.2](#), pg 3)

2.2 Height

2.2.1 The robot must be no more than 270mm in height.

2.3 Control

2.3.1 Robots must be controlled autonomously.

2.3.2 Robots must be started manually by humans.

2.3.3 The use of a remote control of any kind is forbidden.

2.4 Marking and/or Colouring

2.4.1 Competitors are required to mark or decorate their robots to identify them. Decorations must conform to the size restrictions.

2.5 Construction

2.5.1 Any robot kit or building blocks may be used, as long as the robot fits the above specifications and as long as the design and construction are primarily and substantially the original work of the student(s) (see section 4.3, pg 4)

2.5.2 Construction from raw electronic and hardware components is also allowed, as long as the robot fits the above specifications and as long as the design and construction are primarily and substantially the original work of the student(s) (see section 4.3, pg 4)

2.5.3 The Robot construction should be sound. The robot should not fall apart during the game.

3 Victim

3.1 The Victim

3.1.1 The victim is a Cadbury Yowie™.

3.2 Victim Numbers

3.2.1 There is only one victim per rescue attempt.

4 Inspection

4.1 Schedule

4.1.1 The robot will be examined by a panel of referees before the start of the tournament to ensure that the robot meets the constraints described above.

4.1.2 It is the responsibility of teams to have their robot re-inspected if their robot is modified at any time during the tournament.

4.2 Robot Configuration

4.2.1 While being inspected, each robot must be at its maximum size; i.e., anything that protrudes from the robot must be fully extended. The robot be standing upright in its playing configuration. If the robot has a moving part that extends in two directions, it will need to be inspected with this part operating. The robot must be able to operate without touching the measuring cylinder.

4.3 Students

4.3.1 Team members will be interviewed in order to explain the operation of their robots in order to verify that the construction and the programming of the robot is their own work.

Log books or design diaries can be used to provide proof of students work.(see section 7, pg 8)

4.3.2 Students may be asked questions about their preparation efforts, and they may be requested to answer surveys and participate in video-taped interviews for research purposes.

4.3.3 Commercial robot kits may be used but must be substantially modified by the students.

4.3.4 Proof must be supplied that the robots are constructed and programmed by the students, see section 7, pg 8

It is highly unlikely that a team will be able to legally use a robot identical to another team's robot from previous years, or use a robot that is identical to another team's robot.

4.4 Mentors

4.4.1 Mentors will not be allowed in the inspection area.

4.5 Violations

4.5.1 Any violations of the inspection rules will prevent the robot from competing until modifications are effected.

4.5.2 Modifications must be made within the time schedule of the tournament. Game play will not be delayed due to late teams.

4.5.3 If a robot fails to meet all specifications (including modifications) the robot will be disqualified from that game (but not the tournament).

4.5.4 If there is excessive mentor assistance or the work on the robots is not substantially original work of the students, the team will be disqualified from the tournament.

5 Game Play

Games will be organised into rounds, then a finals series.

5.1 Pre-game Set-up

5.1.1 Organizers will make every effort to provide the teams access to the competition area at least two hours before the start of the competition.

5.1.2 Organizers will make every effort to allow at least 10 minutes of setup time before each game.

Participants should be aware, however, that situations may arise where these conditions cannot be met; and so participants should arrive prepared to cope under conditions that are less than ideal.

5.2 Length of a Game

5.2.1 A game will be 90 seconds long.

5.3 Start of the game

5.3.1 The robot is placed at the starting position and checked by the referee.

5.3.2 At the instruction of the referee, the robot's handler is to start the program on the robot. The robot shall begin immediately following the line.

5.3.3 Points are scored by passing check positions on the field. (see [1.1 pg. 1](#))

5.4 Restarts

5.4.1 A robot may re-start the run as the handlers deem necessary within the 90 seconds game time.

5.4.2 The robot must be positioned back at the start and checked by the referee

5.4.3 The game clock will continue to run during all restarts.

5.4.4 There is no limit to the number of restarts within the 90 seconds game.

5.4.5 The robot shall be awarded the points in its longest run during the game.

5.4.6 A robot must restart if:

- The robot ceases to follow the line,
- the robot is touched by a human,
- the robot moves off the field.

5.5 Following the Line

5.5.1 The robot must follow the line completely to enter the swamp.

5.5.2 The robot may follow the short cut (the yellow line) bypassing a section of the black path .

5.5.3 Some portion of the line segment the robot is following must be under the 'plan' view (viewed from the top) of the robot. Should the robot stray from the line, it will deemed to have ceased following the line and have to restart.

5.6 Scoring

5.6.1 Scoring is the same for all games including the finals.

5.6.2 Points are accrued by passing certain check points and achieving certain goals (see section 1.1, pg 1).

- The robot follows the line via checkpoint 1, 2 and 3 - 5 points each
- The robot lifts the victim out of the swamp - 20 points
- (To obtain these points the victim must be lifted off the field)*
- The robot removes the victim from the swamp - 20 points
- The robot regains the line to return - 20 points
- The robot follows the line back via checkpoint 1, 2 and 3 - 5 points each
- The robot carries the victim back to the start - 10 points

5.6.3 The maximum points able to be scored in a game is 100 points.

5.7 Preliminary Rounds

5.7.1 There are 5 preliminary rounds.

5.7.2 Each team will play one game per round.

5.7.3 A round of games will commence on a central time clock.

5.7.4 Teams, with their robot, must be present at the start of a round. Teams failing to show at the start of the round will forfeit that round.

5.7.5 A team's robot must remain at the fields until it has completed its game.

5.7.6 The victim will be located in a new position in the swamp for each round. It will be in the same position for every game in that round.

5.7.7 Teams will be ranked by score (see 5.6, pg 6). Teams on the same points will be ranked by the overall time taken to rescue the victim.

5.8 Semi-Finals

5.8.1 The top four ranked teams will be in the semi-finals.

1st ranked team vs 4th ranked team
2nd ranked team vs 3rd ranked team

5.8.2 Semi-Finals shall be a head-to-head competition on two separate fields with the victim in the same position on both fields.

5.8.3 Teams in the semi-finals shall contest 2 games.

5.8.4 Teams will swap fields between games.

5.8.5 The victim will be in the same position for all games. This position will differ to those in the preliminary rounds.

5.9 Grand Final

5.9.1 The Grand Final shall consist of 4 games between:

Winner 1st/4th vs Winner 2nd/3rd

5.9.2 Teams shall swap fields between games.

5.9.3 The victim will be placed in a new position for the 2nd and 4th games.

6 Conflict Resolution

6.1 Referee

6.1.1 During game play, the referee's decisions are final.

6.2 Officials

6.2.1 Rule clarification may be made by a committee of three officials.

6.2.2 The three officials will be designated prior to the tournament.

6.2.3 The officials shall not have any relationship with any of the teams entered in the tournament.

6.3 Rule Clarification

6.3.1 Ambiguities shall be resolved by referring to these RCJ official regulations, where appropriate.

6.4 Special Circumstances

6.4.1 Specific modifications to the rules to allow for special circumstances, such as unforeseen problems and / or capabilities of a team's robots, may be agreed to at the time of the tournament, provided a majority of the contestants agree.

7 Documentation

7.1 Log Books

7.1.1 Any team that has original (custom) construction of robots or sensors (not freely or commercially available to all competitors) must supply full documentary proof that the developments were wholly the work of the students according to rule 2.5, pg 3. This should be in the form of a log book showing all stages of design, development and construction.

All students in all teams should maintain log books, detailing the design, development and construction of the robot and its programs.

From: <http://www.abc.net.au/newinventors/txt/s1067937.htm>

Write down everything! Not only is this a vital safety measure in verifying your invention; it also encourages you to refine your ideas. Don't skip any of the minor details, no matter how arbitrary they may appear - they may save your bacon further down the track.

Ensure your journal is written in chronological order: date all entries from the date of conception; never backdate any forgotten tidbits as this may appear dubious; furnish all illustrations with a commentary, and record and date every amendment to your invention as it comes to you.

7.1.2 Failure to produce documentary proof will result in the robot or sensor not being allowed to be used in the tournament.

8 Code of Conduct

8.1 Fair Play

8.1.1 Robots that cause deliberate interference with other robots or damage to the field or the ball will be disqualified.

8.1.2 Humans that cause deliberate interference with robots or damage to the field or the ball will be disqualified.

8.1.3 No wireless or infra-red (IR) communication devices will be allowed during the game in the vicinity of the playing field (except for the ball).

8.1.4 It is expected that the aim of all teams is to play a fair and clean game of robot soccer.

8.2 Behaviour

8.2.1 All movement and behavior is to be of a subdued nature within the tournament venue.

8.2.2 Competitors are not to enter setup areas of other leagues or other teams, unless expressly invited to do so by team members.

8.2.3 Participants who misbehave may be asked to leave the building and risk being disqualified from the tournament.

8.2.4 These rules will be enforced at the discretion of the referees, officials, conference organizers and local law enforcement authorities.

8.3 Mentors

8.3.1 Mentors, Teachers and adults are not allowed in the student work area.

8.3.2 Sufficient seating will be supplied for mentors to remain in a supervisory capacity around the student work area.

8.3.3 Mentors are not to repair robots or be involved in programming of student's robots.

8.3.4 Mentor interference with robots or referee decisions will result in a warning in the first instance. If this reoccurs, the team will risk being disqualified.

8.4 Sharing

8.4.1 An understanding that has been a part of RoboCup Competitions is that any technological and curricular developments should be shared with other participants after the competition.

8.4.2 Any developments may be published on the RoboCupJunior web site after the event.

8.4.3 This furthers the mission of RoboCupJunior as an educational initiative.

8.5 Spirit

8.5.1 It is expected that all participants, students and mentors, will respect the RoboCupJunior mission.

8.5.2 The referees and officials will act within the spirit of the event.

8.5.3 It is not whether you win or lose, but how much you learn that counts.