

# Science Hits for Kids

ERASMUS IP

## EDUCATIONAL ROBOTICS

Manuel Filipe P. C. M. Costa

University of Minho  
Portugal

[mfcosta@fisica.uminho.pt](mailto:mfcosta@fisica.uminho.pt)

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**SCIENCE HITS 4 KIDS  
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**The vast majority of students**

**learn in a concrete manner**

**by experiencing or feeling,**

**and**

**process the information actively**

**by experimenting doing or acting upon.**

**Students develop their activities working in teams, in a methodical, autonomous and responsible way: they project, develop and improve their own robots, aiming to participate in festivals workshops and competitions.**

**The use of technologies, that in a few years will become fundamental in their everyday life, at this stage of learning may have the greatest impact.**

**The students have to realize accept and cope with the difference between the real situation they are dealing with and the artificial “organism” they built.**

**The pedagogical approach should lay on the autonomous voluntary and committed learning by practice and hands-on experimental activities.**

**Students with different interests and strengths will work together as a team to achieve a common goal.**

## Robotics' projects main phases:

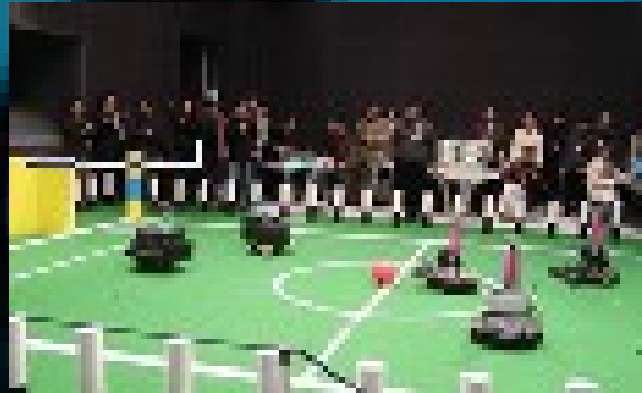
Presentation and popularization and motivation of teachers and students for the theme.

Establishment of the conditions that may allow the Students to be involved forming their team and autonomously develop of their activities.

Development of the robots teams, the knowledge and expected competences.

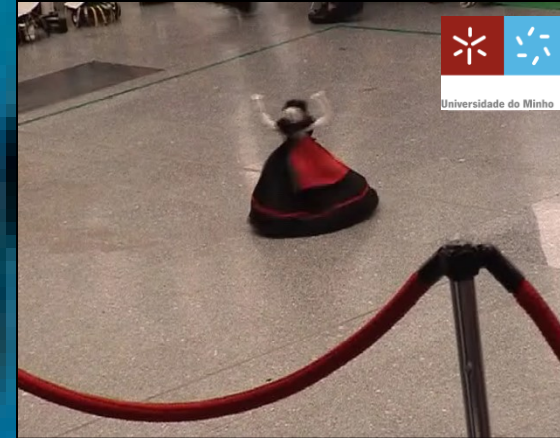
Participation in tournaments, competitions and activities of demonstration/popularization of robotics, automation and artificial intelligence.







RoboCup Junior provides a unique opportunity for participants with a variety of interests and strengths to work together as a team to achieve a common goal. Several challenges have been developed: dance, soccer and rescue.



Robot dance junior



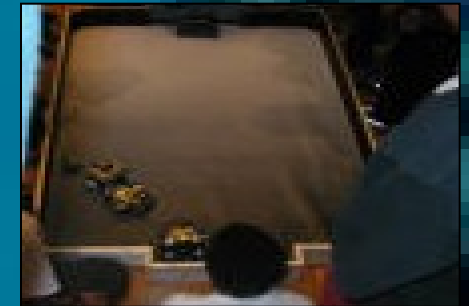
Robot rescue



Robot soccer junior 2 x 2

## Robotic Soccer Junior

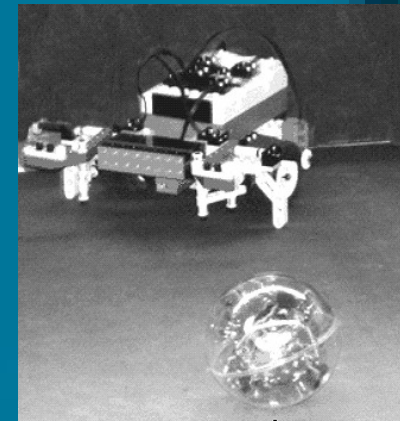
In the football competition one or two robots play against others in a small soccer field colour-coded in shades of grey and using a special IR light emitting ball, with rules that “approaches” those of regular soccer.



In the robotic soccer are used contact, light and infrared light sensors that allow the robots to identify the field, the opponents, and the ball. Other sensors may also be used.

Thus the robot is a structure somewhat complex requiring important programming skills.

Teams must be prepared to calibrate their robots based on the lighting conditions at the venue.

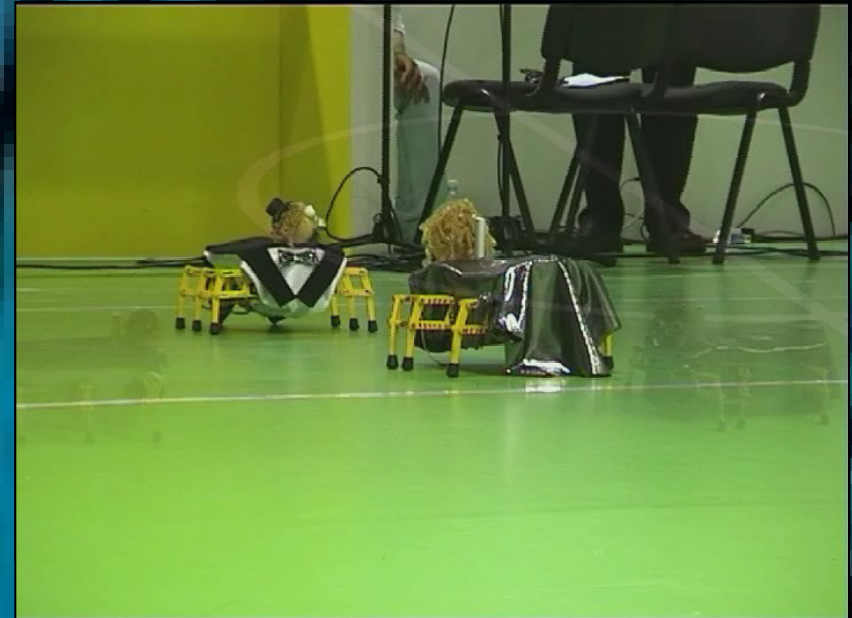


**To find the IR ball... the first major difficulty...**



## Robotic Dance Junior

In dance one or more robots perform a choreography according to music chosen by the team, eventually in an appropriate scenario.

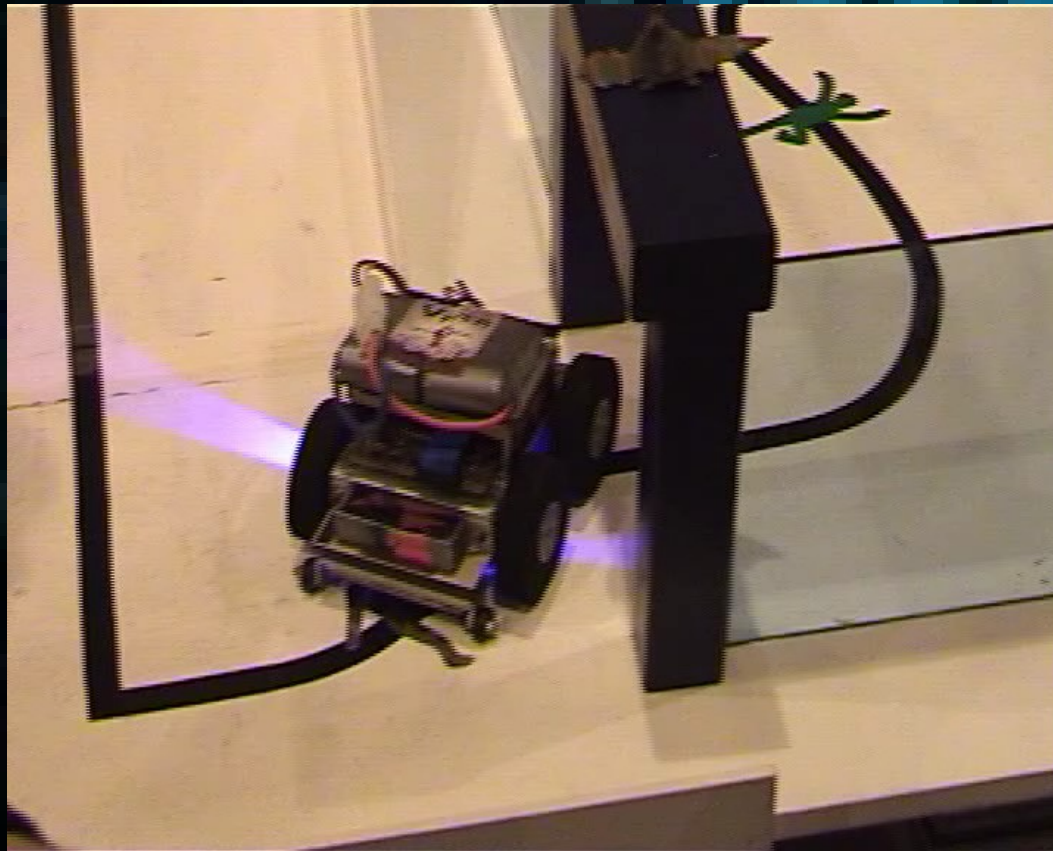


As there is no mandatory use of sensors, this allows a simplified approach to robotics. In this competition the focus of the activities will be the dynamical control of the machine and the design and creativity.

This competition allows to students of every age to enter to the world of robotics, in a very funny way!

## Robotic Rescue

In the rescue competition the robots have to race to “rescue” “victims” from artificial disaster scenarios including uneven terrain and different obstacles.



**The construction of robots and robots' teams is a challenging activity that students, irregardless of their age level, take in a very responsible and committed way.**

# Obrigado

**[mfcosta@fisica.uminho.pt](mailto:mfcosta@fisica.uminho.pt)**

**[www.hsci.info](http://www.hsci.info)**

**<http://ijhsci.aect.pt>**

**<http://hsci.no.sapo.pt/robocourse6.html>**