

RoboCupJunior Soccer - Rubrics

Soccer Technical Committee 2016:

Paul Manns pfmanns@googlemail.com (Germany)

Gio Spina profspina@gmail.com (Canada)

Katsumi Masaoka k-mac@sea.plala.or.jp (Japan)

James Riley eagleriley@gmail.com (Australia)

Marek Šuppa marek@suppa.sk (Slovakia)

Nerea de la Riva Iriepa nereairiepa@gmail.com (Spain) **[Chair]**

These are the official Soccer rubrics for RoboCupJunior 2016. They are released by the RoboCupJunior Soccer Technical Committee. English rubrics have priority over any translations. Please note that rubrics are public for first time in 2016 so all comments and suggestions will be welcome. Use our contact email if you want to help us to improve next year!

Preface:

Rubrics are made for teams to know what relevant aspects will be appreciated in terms of education by OC and approved volunteers at RoboCupJunior Soccer 2016. Unlike the rules, rubrics are not mandatory to follow, they are an useful information for teams to get the maximum points at interview, poster, robot design, team work and superteam integration.

Note that these rubrics will be used at RoboCupJunior Soccer to evaluate your team. These rubrics are the same for all sub-leagues in Soccer.

Poster Rubric 2016 - Leipzig - Soccer league

1. Description

Posters are an important part of Science, Technology, Engineering and Mathematics fields in that they are designed to share knowledge of a project or experiment on a single page (albeit a large one), rather than a multi-page document.

Posters at RoboCupJunior Soccer are designed to be a way to meet one of our primary goals: **to share with and learn from each other and grow the community's knowledge of robotics**. Each year new developments in design, construction and programming are made by teams which when shared helps develop the competition to provide better robots and challenging events. They provide inspiration for teams to grow and develop new and innovative approaches to the league.

2. Requirements for Poster

As part of your poster you are required to include the following components:

- **Title / Identification** – team name, country, sub-league
- **Abstract** – A summary of the entire project. The abstract should not repeat what is stated in other sections but should encapsulate critical features of all the other elements of the poster.
- **Method / Robot Production** – A description of the robots and the design / construction / programming components. Teams should indicate the programming language, sensors used, time and cost of development along with any awards won by the team in regional or national events.
- **Data / Results / Discussion** - The poster has details of the team's development and testing of the robot including any relevant data and modifications made as part of the robot's creation.
- **Photos / Images** – The poster should include images and graphics representing the team's robots and to highlight the previous components of the poster. Images and graphics should be original or should be available for non-commercial reuse with modification as per the creative commons license (<http://creativecommons.org/>).
- All information in the poster should be in English.
- **No poster** – Teams without poster will get 0 points in this rubric.

3. Marking Rubric

Your team's poster will be marked by Members of the Soccer Organisational Committee or Local Committee Members and volunteers under guidance using the following rubric. You will be given a score out of four in each category for a maximum of 20 points.

Category	1	2	3	4
Abstract	<i>Abstract is missing or does not provide a summary of the poster.</i>	<i>Summary does not introduce all aspects of the poster, or repeats detailed information already in the poster.</i>	<i>Clear summary of the team and their robots. Abstract establishes each component in the poster and uses appropriate scientific language.</i>	<i>The Abstract is concise while still introducing all aspects of the poster. The intent of the abstract is to share knowledge with the reader.</i>
Method / Production	<i>Very little to no information is supplied about the construction of the robot.</i>	<i>Aspects of the robots production is not mentioned on the robots, e.g. sensors, motors, programming, construction materials, time and cost of development.</i>	<i>Clear description of the production process of the robot. Section contains all required aspects as listed in the description. Section is organised in a logical</i>	<i>The method / production section has the clear intent of sharing all knowledge of the team's development process to improve the development of the</i>

			<i>sequence (timeline or clear sections)</i>	<i>community. Information is clearly posted with all details of the robot's components and key programming developments.</i>
Data / Results / Discussion	<i>No data is displayed or has no relevance to the team's project development.</i>	<i>Some data or results from testing is displayed on the poster but not major modifications based upon the testing is mentioned.</i>	<i>Clear display of data / information detailing testing and modifications made during the construction of the robot as a result of testing. Use of graphs or tables for displaying data.</i>	<i>The data displayed in the poster demonstrates a clear understanding of the link between testing, evaluation and modification based upon the testing.</i>
Photos / Graphics	<i>Images and photographs are out of focus and do not support the poster's intent.</i>	<i>Some photographs and images are not labelled or cited.</i>	<i>Photos and graphics are relevant to each section of the poster. Images are appropriately labelled, and cited based on the photographer/creator, or appropriately referenced if sourced online.</i>	<i>Photos and graphics are well composed and designed, in clear focus and with a consistency in colour palette/theme.</i>
Layout / Design	<i>Multiple aspects of the poster do not follow a logical sequence and contain significant spelling and grammatical errors</i>	<i>Aspects of the poster layout does not follow a logical sequence. Poster contains some spelling or grammatical errors.</i>	<i>The poster has a clear and logical layout. Information is easy to access for the viewer, graphics, images and text is appropriately positioned. Font size is consistent and spelling is accurate.</i>	<i>The poster contains graphics and design which is original work of the team and effectively highlights the student's creativity and the theme of their team.</i>

4. Evaluation

Team name _____ Team code _____

Country _____ Sub-league _____

Evaluator/s _____

Category	Abstract	Method / Production	Data / Results / Discussion	Photos / Graphics	Layout / Design	TOTAL
Points						

5. Notes

Presentation Rubric 2016 - Leipzig - Soccer league

1. Description

At presentation, teams have the opportunity to share their learning experience, the acknowledged gained during a working year as well as their different tests and experiments trying to find solutions. Moreover, interviews is the moment to prove you know how to work as a team, and highlight the best points about hardware and software design in your robots.

Interviews at RoboCupJunior Soccer are designed to be a way to meet and evaluate the whole students work despite results in the games. Each year new developments in design, construction and programming are made by teams which when shared with OC and TC helps to better know the soccer league status and requirements for next year.

2. Requirements for Presentation

In the presentation you are required to include a slides presentation that contains the following:

- **Team introduction / structure** – A summary of the team, roles, working hours, history, background.
- **Robots hardware** – Mechanics, electronics, robots structure, a description of the robots and their design / construction / programming / components. Students should be able to answer questions regarding the robot's hardware.
- **Robots software** – Teams should indicate the programming languages, program structure and logic. Students should be able to answer questions regarding the robots software.
- **Robots progress** - Robots innovations since the last national / international event if. Students should indicate inspiration sources such as other teams' robots, projects at internet, their own background, etc.
- **Improvements** – A brief list of improvements for next year, future ideas regarding team and robots.
- All information in the interview should be in English. The interview language will be English.
- Teams that **do not attend** to presentation will get 0 points in this rubric.

3. Marking Rubric

Your team's presentation will be marked by Members of the Soccer Organisational Committee or Local Committee Members and volunteers under guidance using the following rubric. You will be given a score out of four in each category for a maximum of 20 points.

Category	1	2	3	4
ORGANIZED / CLEAR	<i>Team was DISORGANIZED and communicated their work UNCLEARLY.</i>	<i>Team was DISORGANIZED but communicated SOME aspects of their work CLEARLY.</i>	<i>Team was ORGANIZED and communicated MOST aspects of their work CLEARLY.</i>	<i>Team was ORGANIZED and communicated ALL aspects of their work CLEARLY.</i>
THOUGHTFUL / THOROUGH	<i>Team addressed NONE of their work thoughtfully (including mechanical, programming, team structure, design process, challenges and innovations)</i>	<i>Team addressed a FEW aspects of their work thoughtfully (including mechanical, programming, team structure, design process, challenges and innovations)</i>	<i>Team addressed MOST aspects of their work thoughtfully (including mechanical, programming, team structure, design process, challenges and innovations)</i>	<i>Team addressed ALL aspects of their work thoughtfully (including mechanical, programming, team structure, design process, challenges and innovations)</i>

KNOWLEDGEABLE / INTERACTIVE	<i>Team demonstrated NO real understanding of their work and did not respond knowledgeably to questions.</i>	<i>Team demonstrated a LIMITED understanding of their work and responded knowledgeably to SOME questions.</i>	<i>Team demonstrated a SOLID understanding of their work and responded knowledgeably to MOST questions.</i>	<i>Team demonstrated a DEEP understanding of their work and responded knowledgeably to ALL questions.</i>
COLLABORATIVE	<i>Only ONE team member had a SIGNIFICANT role in the communication of their work.</i>	<i>MULTIPLE team members had SIGNIFICANT roles in the communication of their work, but a few did not contribute at all.</i>	<i>MOST team members had SIGNIFICANT roles in the communication of their work, but a few did not.</i>	<i>ALL team members had SIGNIFICANT roles in the communication of their work.</i>
VISUALLY CREATIVE / DYNAMIC	<i>Team supported NO aspects of presentation with creative visuals (incl. team structure, code, design, mechanical & electronic references.</i>	<i>Team supported ONE OR TWO aspects of presentation with creative visuals (incl. team structure, code, design, mechanical & electronic references.</i>	<i>Team supported MULTIPLE aspects of presentation with creative visuals (incl. team structure, code, design, mechanical & electronic references.</i>	<i>Team supported MOST aspects of presentation with creative visuals (incl. team structure, code, design, mechanical & electronic references.</i>

4. Evaluation

Team name _____ Team code _____

Country _____ Sub-league _____

Evaluator/s _____

Category	ORGANIZED / CLEAR	THOUGHTFUL / THOROUGH	KNOWLEDGEABLE / INTERACTIVE	COLLABORATIVE	VISUALLY CREATIVE / DYNAMIC	TOTAL
Points						

5. Notes

Robot design Rubric 2016 - Leipzig - Soccer league

1. Description

Design a soccer robot is not an easy task. What will be evaluated here is a combination of originality, hardware and software integration, behaviour, construction materials, electronic devices used, etc.

Evaluate a robot design is not a simple task since we want to keep a lot of room for improvements and innovations. This rubric should be taken as a general guide.

2. Requirements for Robot Design

As was mentioned in the description above, there are no hard requirements on the robot design. However, the teams are required to be able to describe their robots in terms of the categories outlined below.

Teams using a **commercial kits** without any or insignificant changes and innovation at hardware and software level will get 0 points in this rubric.

3. Marking Rubric

Robot Design will be marked by Members of the Soccer Organizational Committee or Local Committee Members and volunteers under guidance using the following rubric. You will be given a score out of four in each category for a maximum of 44 points.

Category	1	2	3	4
HANDLING	<i>It is difficult to operate the robots. → Small switches → Unstable handle → Very basic debugging options</i>	<i>It is easy to operate the robots. → Easily accessible switches that are big enough → Stable handle → Basic debugging options</i>	<i>Level 2 + It is easy to exchange and test crucial parts of the robots such as important ICs, batteries and software subsystems</i>	<i>Level 3 + it is easy to debug the robots using an external device (PC) or mounted display and there is a debug mode for each important part of robot's software</i>
DEFENSE STRATEGIES	<i>The robots have sensors, actuation parts and a programmed strategy to avoid own goals.</i>	<i>Level 1 + Both robots try to stay within the field while protecting their own goal by trying to move closer to it when located somewhere on the field.</i>	<i>Level 2 + The robots leave the field very seldom and are thus not penalized for doing so. The robots move to strategic positions when they do not detect the ball.</i>	<i>Level 3 + The robots have an intelligent positioning on the field that allows them to shield the ball away from their own goal. The robots are programmed to actively avoid the multiple defense strategy</i>
OFFENSE STRATEGIES	<i>The robots have sensors, actuation parts and are programmed to approach the</i>	<i>The robots have sensors, actuation parts and are programmed to approach the</i>	<i>Level 2 + The robots perform special tricks to avoid the opponent's</i>	<i>Level 3 + The robot is able to detect the opponent and can adjust its offense</i>

	<i>opponent's goal approximately or shoot at it approximately.</i>	<i>opponent's goal precisely or to shoot at it precisely.</i>	<i>defense.</i>	<i>approach.</i>
CHASSIS	<i>Chassis is very unstable (major stabilization with hot glue or tape) or bought off-the-shelf.</i>	<i>Robust, self-designed or self-built (printed, sawed, ...) chassis or bought chassis with major modifications that significantly improve the robots stability or design.</i>	<i>Robust, self-designed and self-built (printed, sawed, ...) chassis. Chassis has a modular architecture can be easily disassembled to repair or exchange broken parts in the interior.</i>	<i>Level 3 + Teams have tested different ways of building the chassis and can explain the benefits of the final one.</i>
INTEGRATION ASPECTS	<i>Robots use materials for making robots mostly not build by the team</i>	<i>Robots use plural materials like Arduino + lego + own + printed + commercial parts but their integration seems to be "ad hoc"</i>	<i>Robots use plural materials like Arduino + lego + own + printed + commercial parts in a poorly-integrated design.</i>	<i>Robots use plural materials like Arduino + lego + own + printed + commercial parts in a well-integrated design.</i>
ACTUATION	<i>Actuation with two parallel wheels. Robot can spin and drive straight.</i>	<i>Omnidirectional actuation design with which the robot is at least able to drive in several predefined directions from its position or actuation design with two parallel wheels but enhancements in the movement such as the possibility to drive curves.</i>	<i>Omnidirectional actuation design. The robot is able to drive in any direction from its position. The program can adjust the speed of this movement during the movement (e.g., PID control). The teams have tested different movements for different situations and can explain the benefits.</i>	<i>Level 3 + The robot is able to perform some extra movements like curves or is able to overlay different movements.</i>
SENSORS	<i>Only basic sensors for ball detection (IR) and self-localization (compass) are used.</i>	<i>Level 1 + The robot uses additional sensors like sonars, IR or LASER-range-detectors, phototransistors for line detection.</i>	<i>Level 2 + major parts of the sensor value interpretation have been programmed by the students and are not part of a library shipped with the sensor.</i>	<i>Level 3 + the sensor value recording is distributed to other ICs or parallelized on the main IC.</i>

BALL TREATMENT	<i>The robot has a notch for the ball (or less).</i>	<i>The robot uses a dribbler or a kicker. The function can be demonstrated.</i>	<i>The robot uses a dribbler and a kicker. The function of both can be demonstrated. Both dribbler and kicker are not off-the-shelf hardware.</i>	<i>Level 3 + The robot can detect when the ball has entered the dribbler. It is very difficult to kick ball out of the dribbler. The kicker is able to kick the ball to almost the top of the ramp.</i>
CAMERA	<i>No camera is used.</i>	<i>Camera is able to and used to detect one out of Passive Ball, Goals, Robots, Out-Lines. Demonstration required.</i>	<i>Camera is able to and used to detect two out of Passive Ball, Goals, Robots, Out-Lines. Demonstration required.</i>	<i>Camera is able to and used to detect at least three out of Passive Ball, Goals, Robots, Out-Lines. Demonstration required.</i>
COMMUNICATION AND INTERACTION	<i>No inter-robot-communication is used.</i>	<i>One-directional communication is used (Master / Slave). At least one of the following types of information is exchanged and utilized:</i> <ul style="list-style-type: none"> - Positions - Roles - Strategies - Actions <i>The benefit of the information exchange has to be visible on levels 2 to 4.</i>	<i>Bi-directional communication is used and at least one of the following types of information are exchanged or one-directional communication is used and at least two of the following types of information are exchanged:</i> <ul style="list-style-type: none"> - Positions - Roles - Strategies - Actions 	<i>Bi-directional communication is used and at least two of the following types of information are exchanged or one-directional communication is used and at least three of the following types of information are exchanged:</i> <ul style="list-style-type: none"> - Positions - Roles - Strategies - Actions
INNOVATION (OC defined)	<i>The robot doesn't have any special features.</i>			<i>The robot uses extraordinary techniques for: self-localization, ball-localization, communication, interaction, offense, defense, movement</i>

4. Evaluation

Team name _____ Team code _____

Country _____ Sub-league _____

Evaluator/s _____

Category	HANDLING	DEFENSE STRATEGIES	OFFENSE STRATEGIES	CHASSIS	INTEGRATION ASPECTS	ACTUATION
Points						
Category	SENSORS	BALL TREATMENT	CAMERA	COMMUNICATION AND INTERACTION	INNOVATION	TOTAL
Points						

5. Notes

Team Spirit Rubric 2016 - Leipzig - Soccer league

1. Description

At RoboCup Junior, team spirit is one of the keys to achieve good results, despite of individual skills, teams need to combine them in order to get the full learning experience. It is important that students enjoy working together.

At presentation, interviewers will observe students teamwork when explaining their project. Moreover, a small team challenge such as puzzle or similar will be used to see how students interact one each others, how they communicate with other members in the team and how they try to find different solutions to the same problem.

2. Requirements for Team spirit

In the presentation you are required to include a slides presentation that contains the following:

- Respect other team members and other teams
- Listen
- Collaborate
- Share
- Defined roles
- Enjoy

3. Marking Rubric

Team spirit Rubric will be marked by Members of the Soccer Organizational Committee or Local Committee Members and volunteers under guidance using the following rubric. You will be given a score out of four in each category for a maximum of 20 points.

Category	1	2	3	4
TASK DEFINITION/ROLE	<i>Team members do not know or are not capable of fulfilling role.</i>	<i>Team member has some idea of their own role and can fulfil some requirements.</i>	<i>Team member knows own roll but not others'. Can fulfil own roll.</i>	<i>Team member knows own roll and some of others can fulfil own and some others' functions.</i>
PROFESSIONALISM	<i>Team members show no professional courtesy.</i>	<i>Team member shows minimal professional courtesy.</i>	<i>Team members work respectfully and co-operatively</i>	<i>Team members work very well and help each other when asked.</i>
TEAM DYNAMICS	<i>Only one person's ideas are used. There is confrontation.</i>	<i>One or two people make all decisions and the rest do the work. Individual work dominates.</i>	<i>Simple majority used in decision making. Team co-exists peacefully.</i>	<i>Co-operation and consensus are dominant themes. Team collaborates well.</i>
ENTHUSIASM AND WORK ETHIC	<i>Team members are disengaged; not all work is done.</i>	<i>Some team members are disengaged and one</i>	<i>Team is somewhat interested and work is</i>	<i>Most of team is enthusiastic and work is done well by all.</i>

		<i>or two have to carry the work load.</i>	<i>completed by due date.</i>	
COMMUNICATION	<i>Poor or no communication</i>	<i>Little communication. Information is neither effectively nor efficiently transmitted.</i>	<i>Adequate communication. But team members need to keep rechecking information.</i>	<i>Good communication, not regular. Improvement needed in efficiency and effectiveness.</i>

Evaluation of team spirit involves analyzing the team as a whole and the individual members that make up the team. Team spirit effectiveness depends primarily on the team's organizational effectiveness. Efficient and effective team work goes beyond individual accomplishments, and therefore Best Team spirit should be evaluating both at the interview together with monitoring their on-site work during the activities. Because it is not so easy to go through the working area and evaluate students' on-site work one by one, we can only evaluate them by questioning students through the interview.

4. Evaluation

Team name _____ Team code _____

Country _____ Sub-league _____

Evaluator/s _____

Category	TASK DEFINITION/ ROLE	PROFESSIONALISM	TEAM DYNAMICS	ENTHUSIASM AND WORK ETHIC	COMMUNICATION	TOTAL
Points						

5. Notes

Super Team Integration Rubric 2016 - Leipzig - Soccer league

1. Description

The main goal of the organization of the SuperTeams is to let individual teams cooperate with teams from other countries and other cultures. It is our wish that through these efforts, teams will learn and excel together – and possibly continue exchanges beyond this event.

Participants of this challenge are required to give the best of their abilities in programming, robotics, electronics and mechatronics, but also to contribute on teamwork and knowledge sharing with other participants, regardless of culture, age or result in the competition. All are expected to compete, learn, have fun and grow up.

One goal of Super Team competitions is to take a shared interest in robotics and use it to promote communication and exchange, both at the technology and culture levels. The SuperTeam must be reliable to sharing, adapt to different attitudes culture and approach to problem solving. Teams must meet, cooperate and interact with all team members. SuperTeam must be able to organize and structure themselves to solve problems, create strategies and help during the competition, assign roles on the team during SuperTeam competition.

2. Requirements for Super team

During competition will be evaluated aspects related to the interaction of the teams, the responsibilities, leadership, enthusiasm, cooperation and problem solving of the Superteam members. We encourage superteams to prepare a brief presentation together regarding their collaboration during competition days.

3. Marking Rubric

Your Super team's will be marked by Members of the Soccer Organizational Committee or Local Committee Members and volunteers under guidance using the following rubric. You will be given a score out of four in each category for a maximum of 36 points.

Category	1	2	3	4
FIRST CONTACT Knowledge of teams and countries of origin.	<i>Random students or two identify only 2 team origins.</i>	<i>Random student or two identify only 3 team origins.</i>	<i>Random student or two identify more than 3 team origins.</i>	<i>Random student or two, able to identify all team origins.</i>
RESPONSIBILITIES/ROLES ex. Captain, Assistant, Strikers; Goalies, Meeting organizer, Secretary, etc.	<i>Team has not assigned roles or tasks for individuals.</i>	<i>Team selected only a captain</i>	<i>Team assigned fewer than 4 roles. Ex. Captain, Assistant, Goalie, etc</i>	<i>Every member of the team assigned a role, including robot field position.</i>
LEADERSHIP Person effectively guiding the group; not necessarily the captain or elected to the post.	<i>There is no evidence of leadership.</i>	<i>There is some evidence of leadership, but not consistent.</i>	<i>There is some evidence of leadership and direction.</i>	<i>There is a strong and respected leader in the team.</i>
ENTHUSIASM/MOTIVATION	<i>Most only concerned with</i>	<i>Only a few seem interested and excited.</i>	<i>Majority of the team attentive and confident.</i>	<i>Entire team eager and bursting with confidence.</i>

Team is confident and ready to face all challenges.	<i>individual game and performance</i>			
PROBLEM SOLVING Handling of recent performance in discussions and in game results	<i>Problems noted, but left unresolved during meeting</i>	<i>Problems raised; but only few offered possible solutions.</i>	<i>Problems raised; solutions offered; but no action adopted.</i>	<i>Problems noted and effectively discussed; solutions offered; strategy adopted.</i>
COOPERATION Purpose of SuperTeam challenge: sharing, adapt to different attitudes and cultural approach to problem solving	<i>Members reluctant to share ideas, voice suggestions, and generally not participating in a group effort.</i>	<i>There are only a few members making suggestions, and only a few really engaged in the project.</i>	<i>A good attempt by most members to engage in the process; a few are intimidated by language barrier, while others do not step up to help.</i>	<i>Members show positive attitude; freely share information and tasks; demonstrate listening skills and good work ethic.</i>
STRENGTHS/WEAKNESSES What have members learned so far about team robots?	<i>Team identifies 2 perhaps meaningful strengths or weaknesses.</i>	<i>Team identifies 3 key strengths or weaknesses; no follow up.</i>	<i>Team identifies 4 key strengths or weaknesses; reasonable proposals offered.</i>	<i>Team lists 5 key strengths or weaknesses; solid proposals offered.</i>
GROUP INTERACTION Group dynamics; contribution to discussions; problem solving; devising strategies.	<i>Too much argumentation and too little listening; very little in terms of useful discussions.</i>	<i>Good proposals; poor listening skills; a few tend to monopolize discussions.</i>	<i>Good group dynamics between speakers and listeners.</i>	<i>Great group dynamics; orderly approach to final consensus.</i>
BEYOND ROBOCUP COMPETITION One goal of SuperTeam competitions is to take a shared interest in robotics and use it to promote communication and exchange, both at the technology and cultural levels.	<i>Little evidence of interaction and exchange, both in technology and culture; no desire for contact beyond RoboCup.</i>	<i>Some evidence of interaction and exchange, both in technology and culture; some desire for contact beyond RoboCup.</i>	<i>Some evidence of interaction and exchange, in either technology or culture; some desire for contact beyond RoboCup.</i>	<i>Definite evidence of interaction and exchange, both technological and cultural; definite desire for contact beyond RoboCup.</i>

4. Evaluation

SuperTeam name _____ Sub-league _____

Evaluator/s _____ SuperTeam code _____

Category	FIRST CONTACT	RESPONSIBILITIES/ ROLES	LEADERSHIP	ENTHUSIASM/ MOTIVATION	PROBLEM SOLVING
Points					



Category	COOPERATION	STRENGTHS/ WEAKNESSES	GROUP INTERACTION	BEYOND ROBOCUP COMPETITION	TOTAL
Points					

5. Notes
