RoboCupJunior OnStage – Scoresheets 2022

OnStage Technical Committee 2021: *Margaux Edwards (Australia) CHAIR* *Meital Domb (Israel)* *Nicky Hughes (UK)* *Christian Häußler (Germany)* *Nicolas Doyon (Canada)* *Luis Gonzalo Morales (Mexico)* **OnStage Committee 2022:** *Margaux Edwards (Australia) CHAIR* *Christian Häußler (Germany)* *Nicky Hughes (UK)* *Nicolas Doyon (Canada)* *Luis Gonzalo Morales (Mexico)* *Evgeny Shandarov (Russia)*	**RoboCupJunior General Chairs & Execs**: *Irene Kipnis (Israel, General Chair)* *Julia Maurer (USA, Co-Chair)* *Luis Jose Lopez Lora (Mexico)* *Marek Šuppa (Slovakia)* *Roberto Bonilla (USA)* **Trustees representing RoboCupJunior**: *Amy Eguchi (USA)* *Irene Kipnis (Israel)*

These are the official OnStage scoresheets for RoboCupJunior 2022. They are released by the RoboCupJunior OnStage Committee. English rubrics have priority over any translations. Please note that score sheets are public, and all comments and suggestions will be welcome. Use the RCJ forum (https://junior.forum.robocup.org) if you want to provide feedback.

OnStage Overview

An OnStage Performance must showcase the implementation and integration of robotic features in ways that visually enhance or add value and contribute to the theme or story being portrayed.

Consequently, teams must present what they believe are four of their best robotic features: for example, system/sensor integration, electromechanical design, interaction, or software solutions implemented on their robot(s). The aim should be to present the integration of the chosen features and how the features contribute to the progression of the performance.

Examples of features include, but are not limited to: locomotion, object/human detection, human, robot and/or prop interaction, object avoidance, manipulation (grabbing/grasping), visual/audio recognition or localization and mapping.

Teams will be asked to describe and provide reasoning for their four chosen technologies in the Technical Description Paper (TDP) and during their Technical Video Demonstration before being judged on the implementation of these features during the Performance.

For clarification on a teams' features, please do not hesitate to reach out to the OnStage committee using listed communication forums.

Preface

Rubrics are made for teams to know what relevant aspects will be appreciated in terms of education by the judges at RoboCupJunior OnStage 2022. They are a useful source of information for teams.

These score sheets will be used at RoboCupJunior OnStage to evaluate your team.

Official RoboCupJunior site: https://junior.robocup.org (Click OnStage tab)

Official RoboCupJunior forum: https://junior.forum.robocup.org/

OnStage **Technical Video Demonstration** Score Sheet 2022

Team Name: …… Country/Region: ……..……

Category	Examples of how high marks may be achieved are:	Mark
Robotic Demonstration	**Demonstration of a fully working robotic system.** Demonstrates the overall capabilities of the robot(s), including the four chosen features Demonstrates fully working robotic systems without costumes as described in the Technical Description Paper	/10
Design Process	**Explain the design processes used during the development of the robotic systems** Highlights how they overcame challenges in their design process, especially focusing on team's problem solving Communicates team member's roles and the contributions to the different systems (electromechanical, software etc.)	/6
Presentation	**Clarity and quality of the presentation.** Presents a well-polished demonstration. Graphics and accompanying materials are clearly explained and presented.	/5
Communication of Technologies	**Communicating** Effectively communicates the technical capabilities of the robot to the audience in a concise and clear manner. Technically unusual, creative, or ambitious concepts in the team's robotic performance are clearly explained.	/5
Feature Selection Process	**Features** Teams will be rewarded for their explanation of the selection process used in deciding their four features to be judged during their performance.	/4
	Total Score	**/30**

OnStage **Technical Interview** Score Sheet 2022

Team Name: …… Country/Region: ……

Category	Examples of how high marks may be achieved are:	Mark
Programming	**Ability to explain the program and the interactions between the hardware and software:** - Choice of programming language, - Difficulties with the software - Development of appropriate models, datasets and/or libraries to solve programming solutions - Innovative programming solutions - Efficient and optimized programming with clear documentation and commenting	/6
Electromechanical Systems	**Ability to explain why electromechanical design choices were made:** - Choice of materials and actuators - System kinematics - Development of custom electronics (including PCBs) - Power management, regulation, and battery choices - Microcontroller choice - Design choices are made to ensure systems are reliable and durable **Explain how systems are fit for purpose - examples include:** - Complex mobility - omnidirectional/legged robots - Traverse different terrains - High precision systems including pneumatics - Functional arms/hands/faces - Robotic arms for manipulation - Automatic balance system - Custom components	/9
Sensor and Communication Systems	**Ability to explain the role of sensors and communication in the systems and how the robots interact with the stage environment:** - Robot systems can dynamically respond to unplanned events - Robots can sense their environment and use the information to dynamically respond with an action - Integration of multi sensor systems to develop solutions - Development of communication between sensors - Creation of communication architectures (asymmetric communication) **Explain how systems are fit for purpose - examples include:** - Visual/Audio recognition - Developed guidance, navigation, and control systems - Robot-Robot interaction - Natural Robot-Human interaction - Stage/Robot localization systems	/9
Technical Description Paper	Demonstrates authenticity in the project development. Clear descriptions of the four chosen features Hardware and software choices are clearly described. The submission was made using the correct format.	/6
Deductions *(At discretion of judges, up to 15 points each)*	• Judges believe the work was not done by team members • Team members are unable to discuss their technical involvement with the robot	
Total Score		/30

OnStage **Performance** Score Sheet 2022

Team Name: …… Country/Region: ……

<table>
<tr><th>Category</th><th>Examples of how high marks may be achieved are</th><th>Mark</th></tr>
<tr><td>Visual Impact and Quality of the Whole Performance</td><td>The robotic performance makes attempts to communicate with and engage the audience. For example:
There is a clear link/ theme/idea/message displayed throughout the performance. Theme is consistent and is well understood.
Performance is engaging and takes steps to entertain the audience.
Effective use of the performance space, relative to the theme or overall idea.
Robot costumes compliment the performance, add value, and provide visual impact.
Interaction with original and innovative props or scenery impacts the performance in a way that is engaging and adds value.
Risky/difficult movements are taken and compliment the theme.
Impactful and interesting interaction between robots and/or humans.</td><td>/ 16</td></tr>
<tr><td>Effective implementation of features presented by the team.</td><td>Implementation of Features/Robotic Interaction/System Integration:
0 No implementation
1 Poor implementation - does not work as expected and does not add value to the performance
2 Average implementation - works as expected but does not add value to the performance
3 Good implementation and impact - works as expected and adds value to the performance
4 Excellent implementation and impact - works as expected and adds extensive value to the performance
<table>
<tr><td>Feature 1:</td><td>/4</td></tr>
<tr><td>Feature 2:</td><td>/4</td></tr>
<tr><td>Feature 3:</td><td>/4</td></tr>
<tr><td>Feature 4:</td><td>/4</td></tr>
<tr><td>Robotic Interaction:</td><td>/4</td></tr>
<tr><td>System Integration:</td><td>/4</td></tr>
</table></td><td>/24</td></tr>
<tr><td>Deductions:
-3 for each deduction at discretion of judges</td><td>• Each unplanned human intervention (including remote or human controlled actions)
• One or more restart(s)
• Each 10 seconds over the allotted time (on stage or performance)</td><td></td></tr>
<tr><td>Total Score</td><td></td><td>/40</td></tr>
</table>

Teams that infringe the rules will be warned that such infringements will not be allowed in the second performance