RoboCup Junior Croatia

Category On Stage

RULES AND ORGANIZATION OF THE COMPETITION

1. Competition schedule

This year's competition will be held from 14 to 21 April 2022. Online on the Zoom platform.

2. Participants in the competition

Participants in the competition are teams of 2 to a maximum of 4 members. Team members are aged 10 to 14 and have not participated in international competitions.

3. Task teams

The team's task is to design a creative stage performance lasting one to two minutes that will include performances by robots and team members. Teams need to create a stage performance that will include reliable robotic constructions that will interact with team members in addition to song, dance, storytelling or play. The emphasis is on the construction of autonomous robots that the team members designed, made and programmed independently under the guidance of a mentor and the performance of the robot, and not on the performance of the team members.

4. Team evaluation

Teams are evaluated in the following areas - technical presentation, technical interview and performance on stage, according to the rules of RoboCupJunior OnStage - Rules 2022, which is available at the links:

http://2022.robocupjunior.eu/docs/2022_OnStage_Rules_final01.pdf

5. Obligations of organizers and teams

By March 25, 2022, the competition organizer will publish on the website scoring tables for technical presentation, technical interview and performance on stage (video from one to two minutes).

By April 14, 2022, all registered teams should put on Discord link https://discord.gg/VQsmUbBH :

1. Link to the technical presentation that should be available by clicking on the link without asking for access.

Technical presentation teams can create as a PowerPoint presentation, video presentation or presentation in a web digital tool of personal choice (Prezzi, Canva,…).

2. A link to a one- to two-minute video that should be available by clicking on the link

without seeking approval.

Important: The video must show the entire stage, robots and team members at all times, also the video must not be edited or interrupted.

On April 15, 2022, all received videos and the organizer of the technical presentation will be made public on the website:

https://robocupcroatia.com/

On April 16, 2022, the date and time of the team interviews with the judges will be published on the website https://robocupcroatia.com/. Each team will receive a link to join the Zoom platform to the email provided in the application.

On April 19, 2022, the names of the four most successful teams will be announced, which will perform a real-time stage performance with robots on April 20 via the Zoom platform. The link for Zoom teams will be sent to the e-mail specified in the application.

Important! The entire stage, robots and team members must be visible at all times during the performance.

The results will be published on

https://robocupcroatia.com/

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Scoring table

OnStage **Technical Video Demonstration** Score Sheet 2022

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

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

Category	Examples of how high marks may be achieved are	Mark
Visual Impact and Quality of the Whole Performance	**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	/ 16
Effective implementation of features presented by the team.	**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

Feature 1:	/4
Feature 2:	/4
Feature 3:	/4
Feature 4:	/4
Robotic Interaction:	/4
System Integration:	/4

| /24 |

Deductions: -3 for each deduction at discretion of judges	- 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)	
Total Score		**/40**