TECHNOXIAN

WORLD ROBOTICS CHAMPIONSHIP

EGYPT

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Innovation

The innovation category is a great way for students to show off their imagination and creativity. Each team has complete freedom to create autonomous robotics projects such as robot pets, robot artists, dancing robots, storytelling with robots, robots for scientific experiments, and practical robotics applications. Computer controlled robots with sensors may be of any size and can use any material. Hard-wired remote control is not allowed. However, **wireless host computer/robot control via software messages is allowed. Human interaction with the robots is allowed and encouraged.**

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Learning Objectives

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1	Engineering Skills
2	Developing autonomous algorithms
3	Computer programming logic
4	Sensor implementation
5	Imagination
6	Resilience and Adaptability to environmental conditions
7	Creative Problem-Solving
8	Teamwork
9	Presentation skills

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Who can apply..?

We encourage you to apply if you meet our eligibility criteria and other requirements.

Age group

Junior division (6-9 years)

Senior division (10-16 years)

Team composition

Participants can compete in teams, the maximum number of team (3-8members per team).

Competition category

Junior Category : Create a model project as innovative solution using various materials (e.g, LEGO, recycled materials,…)

Senior category : Create a robotics project for solving certain problem using any kits

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Project criteria

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1- No specific theme is required for this category; participants are free to address issues related to environmental challenges, educational needs, or any other area of interest.

2- Juniors category involved creating a model project using a variety of materials whether LEGO, cardboard, recycled items, or anything else you can imagine as a simulation for solving problem . Let participants creativity run wild, as there are no limits to what they can build!

3- The team model of juniors must be used motor(s) and sensors to make a model move and be interactive.

4-Seniors participants are required to design and build a functional robotic project that addresses a specific problem or challenge.

Project criteria

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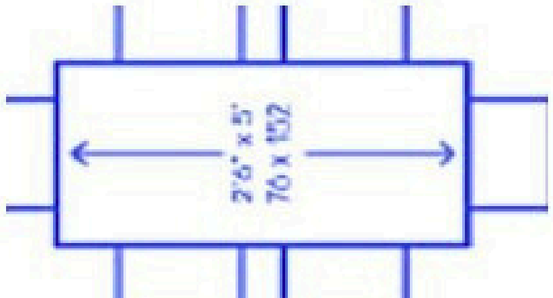
5- Seniors should showcase creativity, technical proficiency, and problem-solving skills by integrating sensors, motors, and programming to create a working robot such as: delivery robot, smart recycling robot, or farming robots

6- Juniors and seniors categories are requested use poster boards or other visuals to describe their projects

7- The standard tables which make it easy for participants to interact with their projects:

- Length: 1.52 meters (152 cm)
- Width: 0.76 meters (76 cm)



Project criteria

4- Projects that have previously been entered in any competition category can be submitted again, provided the team:

- Adds new features and/or makes significant improvements or changes to one or more aspects of the project.

- Mention details these additions or changes in the project description section on the review report.

- Notifies the judges during the official presentation that their project is a continuation of a previous project.

Project Documents

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Teams must submit project Documentation At least two weeks prior to competition day:

Project review report

Preview Video link uploaded to the registration system

Source code for judge review.

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Project Report includes

1	Title page: • descriptive title of project • Names and roles of team members.
2	Overview of the project: • clear definition of the problem the robot aims to solve. • the project's objectives, and its relevance.
3	Solution overview: • Explanation of the innovative solution • Details about the design process, methodologies used, and how the project was developed. • How the solution impacts the Problem area • Overview of programming used.
4	Reference: List of sources used for research and development. **Wikipedia and similar sites are not allowed as references** **“ recomebdation websites** IEEE Explore Journal of robotics
5	The report should be well-organized, technical, and focused on the innovative aspects of the robotic solution.

Preview video Requirments

1	Approximately 4 minutes, max 5 minutes
2	Includes the Team ID, Team Name and team member introduction
3	Preview Video should be submitted Two week prior to the competition
4	Preview Video may be the same or differ from the live demonstration
5	Editing is not must but preferred

Code submission Guidlines

1	Arrange code to help make it easy to understand
2	Highlight aspects of code that are important
3	If needed, add comments to help explain
4	Pdf format (print programs or images can be pasted into Google Slides or PowerPoint, then saved as pdf)
5	Include team number and team name in file name

Project Presentation

1	Teams must present their innovation project to the group of Judges with a formal presentation at a time specified
2	Teams will have a maximum of 5 minutes to explain and demonstrate their project to the Judges
3	Exceeding time limit may result in deduction of points
4	Presentations that go beyond 5:30 will be penalized 1 point for every 30 seconds beyond 4 minutes
5	Judges will then conduct a 2-minute Question/Answer session

Judging Criteria

The Innovation Competition judging categories draw on the posited that anyone proposing a robotics project or model idea should follow the criteria below.

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Judging Rubric : senior

check the judging rubric for seniors

Robotics projects may be constructed from any kits , modified from other devices to create new applications, or constructed from the student's own concepts and designs. All entries must be a working and functional piece of electro-mechanical hardware in which movement and intent is controlled through student created programming. Devices controlled through direct, real time remote control by the student are not appropriate (ie: remote controlled cars). Once started, the robotics project should operate as a standalone independent machine without human interaction (autonomous).

Judging Rubric : Junior

check the judging rubric for Juniors

Team generated innovative ideas independently and develop it or built on an existing one with a prototype model to represent their solution.

Judging rubric : senior

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	Minimal 1 point	Partial 3 points	Mastery5 points
Problem	Problem is explained only partly or explanation of problem is unclear.	Problem is clearly explained and the invention or innovation addresses the problem directly.	Problem is creatively addressed through a new invention or an innovation of a current product changed or used in another way.
Research student(s) include citations for sources and written in his own words	Cites only one or no information resources (e.g. text, magazines, Internet, or interviews). Fails to mention a known similar idea in common use, or material is copied rather than written in the student's own words.	Cites few information resources. Mentions known similar ideas with some elaboration. Makes a general connection to a similar idea in the student's own words.	Cites at least four types of resources. Makes a clear and well-elaborated connection with a known similar idea in his/her own words.
Possible Solutions or Innovations all elements of the robotics project work together to serve the intended purpose	Proposed solution of invention or innovation of another idea is not a practical solution to the problem.	Proposed solution of invention or innovation of another idea is practical and well thought out. The solution makes sense.	Proposed solution is creative and clearly solves the problem. Provides sufficient description for reader to understand how the invention or innovation will solve this problem.
Demonstration to Show How Well it Worked students should create a poster to show all robotics project's details	student provides few details, leaving the reader unclear about how the invention or innovation works	Student provides adequate details, giving the reader a general understanding of how the invention works.	Demonstration clearly shows how the invention can work using charts, graphs or other visual representations.

Judging rubric : senior

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	Minimal 1 point	Partial 3 points	Mastery5 points
Complete and Functional student(s) complete the entire robotics project	Robot does not work at all.	Robot is incomplete and still needs more work to be fully functional.	Robot is complete and functions certain tasks as designed through student created programming.
Obstacles Teams should demonstrate that they have a broad understanding of existing challenges/approaches and have made efforts to integrate new perspectives into a novel solution or approach.	Fails to analyze obstacles related to the practical design and function of the invention	Provides some analysis of the obstacles related to the practical design and function of the invention (i.e. may discuss durability, strength, ease of use, etc.).	Demonstrates in-depth analysis of the obstacles related to the practical design and function of the invention.
Display presentation The team's presentation should be organized, clear, and enthusiastic. It should provide useful visuals and keep the audience engaged.	Project has limited eye appeal or is not easily readable at a two-foot distance. The project has limited organization, or contains confusing visuals, or contains language or spelling errors.	Project is appealing and is readable at a two-foot distance. It is organized and clear, uses understandable visuals and/or models, and has few language or spelling errors.	Project is appealing and neat, and is readable at a two-foot distance. It is well organized and clear, makes striking use of original, inventive, or amusing visuals and/or models, and uses grammar and spelling flawlessly.
Project programming Robotics Projects in this category are executable programs created by the student using a programming language. All parts of the program must be the author’s own design. Programs must be functional and have a specified intended purpose.During the evaluation, students will showcase a proficient grasp of the code and effectively articulate their coding rationale.	Student displayed little to no understanding of the software used.	Student used a drag-and-drop interface to program the robot.	Student is able to answer specific questions about their project and the methods used to control the robot. Student displays mastery in understanding of the programming language used.

Judging rubric : senior

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	Minimal:1 point	Partial: 3 points	Mastery: 5 points
Creativity student(s) use a higher level of creativity throughout the design process and oral presentation(Nervousness should NOT count against the student)	Minimal levels of creativity shown in the project design and oral presentation.	Students display lower levels of creativity in the design process and/or oral presentation.	Student displays a high level of creativity throughout the entire design process. The oral presentation is unique, well-planned, and creative.
Impact Teams should demonstrate that they understand the context of the project in the real world and the needs of stakeholders who would benefit from the new approach.	No discussion of stakeholders (e.g., users/ customers/ beneficiaries), no explanation of broader impact.	Mentions potential stakeholders with no obvious connection to project outcomes.	discussion of how stakeholders could potentially benefit from project outcomes
Design, innovation & impact report Each team will prepare and submit a written report with no more than 2000 words (excluding references, footnotes, and bibliography) in Microsoft word format. The report is a summary of your project, and could also contain elements of your verbal presentation. All references, either written or online must be included as appropriate.	Basic overview with unclear or incomplete key objectives and goals. Does not effectively summarize the project.	Provides a clear overview with most key objectives and goals summarized. Some details may be missing or lack clarity.	Comprehensive and concise overview that clearly summarizes the project, objectives, Methods and key findings with excellent clarity and detail.
Preview Video the video gives a clear explanation of features of the project, includes the,Team ID, Team Name and Team member introduction (min 4 minutes/max 5 minutes). Video may be edited	Video is Too short or too long and difficult to follow, with unclear explanations and minimal engagement. Editing may be poor or non-existent.	Video is mostly clear and engaging, but may have some parts that are harder to follow or less engaging. Editing is present but could be improved.	Video is very clear and highly engaging throughout. Explanations are easy to follow, and the editing enhances the overall quality and professionalism.

Judging rubric : Junior

	Minimal: 1 point	Partial:3 points	Mastery: 5 points
Problem IdentificationClear definition of the problem being studied	Problem not clearly defined	partially clear; details missing	clear; very detailed
Team model The team described a creative team model and the solutions to the challenge that it represented.	No model of solution	Simple model Which helps to share the solution	Detailed Model which helps to share the solution
Coding Team members explained how their code(s) made their model move.	Unclear, difficult to understand	Partially Clear, understandable	Easy to understand by all
Motorised Part Team used motor(s) and sensors to make their model move and be interactive	Model has no motorized Part	Model has at least one of Interactive features (Motor or sensor)	Model has motors and sensors together.
Team poster Team creates poster that showed information about their challenge solutions, team model, coding, and their team.	Disorganized and missing one of poster criteria	Partially Organized and Completed with poster criteria	Well organized and present The work uniquely
Team presentation Team shared a creative and effective presentation of their current solution and its impact on their users.	unclear OR disorganized	partially clear; minimal organization	clear AND well organized

juniors category ideas