





# Comparison of Four Robot Competitions

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Abstract – The author has participated in four different robot competitions, FLL, IRO, WRO, and Robofest multiple times as a team coach. This article compares the four robotic competitions in a table.

	Robofest	First Lego League (FLL)	International Robot Olympiad - IRO	World Robot Olympiad - WRO
Web site	<a href="http://www.robofest.net">www.robofest.net</a>	<a href="http://www.firstlegoleague.org">www.firstlegoleague.org</a>	<a href="http://www.iroc.org">www.iroc.org</a>	<a href="http://www.wroboto.org">www.wroboto.org</a>
Organizer	Lawrence Technological University (LTU) <a href="http://www.LTU.edu">www.LTU.edu</a>	First@ Lego Group	International Robot Olympiad Committee	WRO Advisory Council
Participants (2012~2013)				
Robots	Any Robots	Only Lego products	Any Robots	Only Lego products
Robot Control	Autonomous	Autonomous	Autonomous Some competition is remote control (Robot Push Out)	Autonomous
Exhibitions	○	×	○	○

	<b>Robofest</b>	<b>First Lego League (FLL)</b>	<b>International Robot Olympiad - IRO</b>	<b>World Robot Olympiad - WRO</b>
<b>Missions</b>	Game - Junior & Senior (Regulatory changes every year) Exhibition - Junior & Senior (Free Theme in Mathematics and Science subjects) Advanced Vision Centric Robot Challenge	Robot Game & Project (Regulatory changes every year)	Robot Biathlon Robot Dancing Humanoid Soccer Mission Challenge Robot in Movie Robot Push out Robot Gathering Transporter Creative Category (Regulatory changes every year) Junior & Challenge	Regular Category (Regulatory changes every year) Elementary & Junior & Senior Open Category (Regulatory changes every year) Elementary & Junior & Senior WRO GEN II Football
<b>Unknown Mission</b>	○	×	○	○
<b>Season Schedule</b>	Regulatory Open : December Local Qualifiers World Championship : May	Regulatory Open : September Local Qualifiers FLL World Festival Asia-Pacific Championship Open European Championship April ~ July	Regulatory Open : April Local Qualifiers IRO : December	Regulatory Open : March Local Qualifiers WRO : November ~ December
<b>Team Configuration (without coach)</b>	minimum 1 ~ maximum 7	minimum 5 ~ maximum 10	minimum 1 ~ maximum 2or3	minimum 2 ~ maximum 3
<b>Programming Language</b>	Any Programming Language is available	Robolab 2.x NXT-G, EV3, RobotC	Any Programming Language is available	Robolab 2.x NXT-G, EV3

	<b>Robofest</b>	<b>First Lego League (FLL)</b>	<b>International Robot Olympiad - IRO</b>	<b>World Robot Olympiad - WRO</b>
Robot Construction	<ul style="list-style-type: none"> <li>• Construct before Competition Day</li> <li>• No restrictions on the use of sensors &amp; motors</li> <li>• Only one control device</li> </ul>	<ul style="list-style-type: none"> <li>• Construct before Competition Day</li> <li>• Restrictions on the use of sensors &amp; motors</li> <li>• Only one control device</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-built robots are not allowed. Construct on the competition Day</li> <li>• Restrictions on the use of sensors &amp; motors</li> <li>• Only one control device</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-built robots are not allowed. Construct on the competition Day</li> <li>• Restrictions on the use of sensors &amp; motors</li> <li>• Only one control device</li> </ul>
Production costs for the game field	★☆☆☆ Every year, using the same game field, the new rules are presented.	★★★★★ Require the purchase of a new game field every year	★★★☆☆ Depending on the Competition	★★★☆☆ Require the purchase of a new game field every year
Time limit in the Competition	120sec	150sec	Depending on the Competition Most 120 sec	120sec
Ranking method	Average of two game rounds	After the game one of the tournament scores (Depending on the robot game)	Depending on the competition	Better record out of two rounds
OVERALL	Low-cost and affordable competition; Focusing on mathematics, science, and problem-solving skills.	Require scientific research, and teamwork is very important.	A team can participate in multiple competition categories.	Problem-solving skills using mechanical engineering principles are important; Speed of the robot is critical.