

# ROBOT FOOTBALL OLYMPICS

Game Rulebook

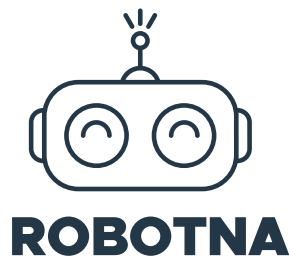






# ROBOT FOOTBALL OLYMPICS

A Global Fusion of Sport, Innovation & Youth Leadership



وزارة التربية و التعليم  
Ministry of Education

## Game Rulebook

5 – 6 December 2025



Education Partner



Strategic Partner



Community Partner



Media coverage



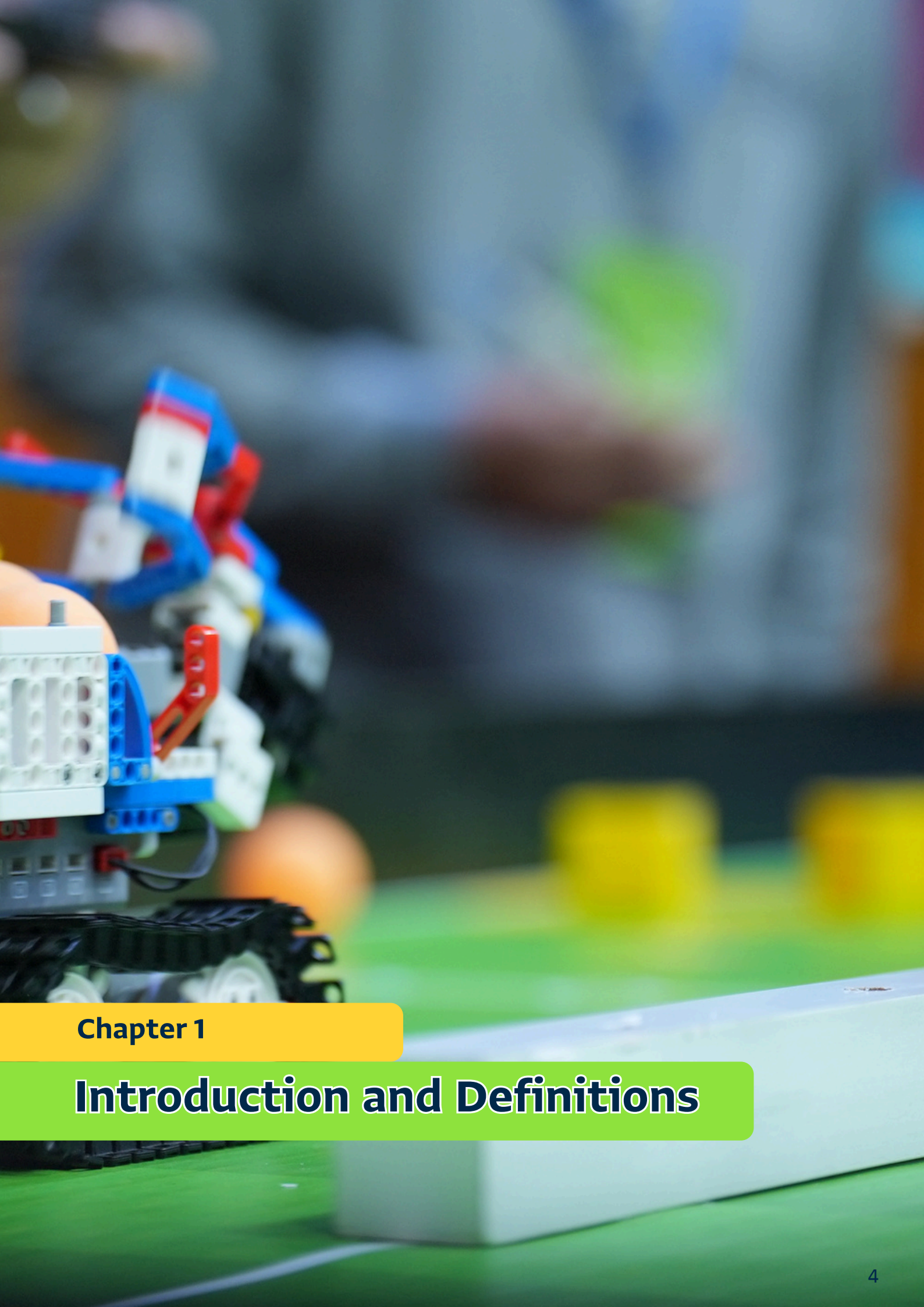


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## Chapter 1

# Introduction and Definitions

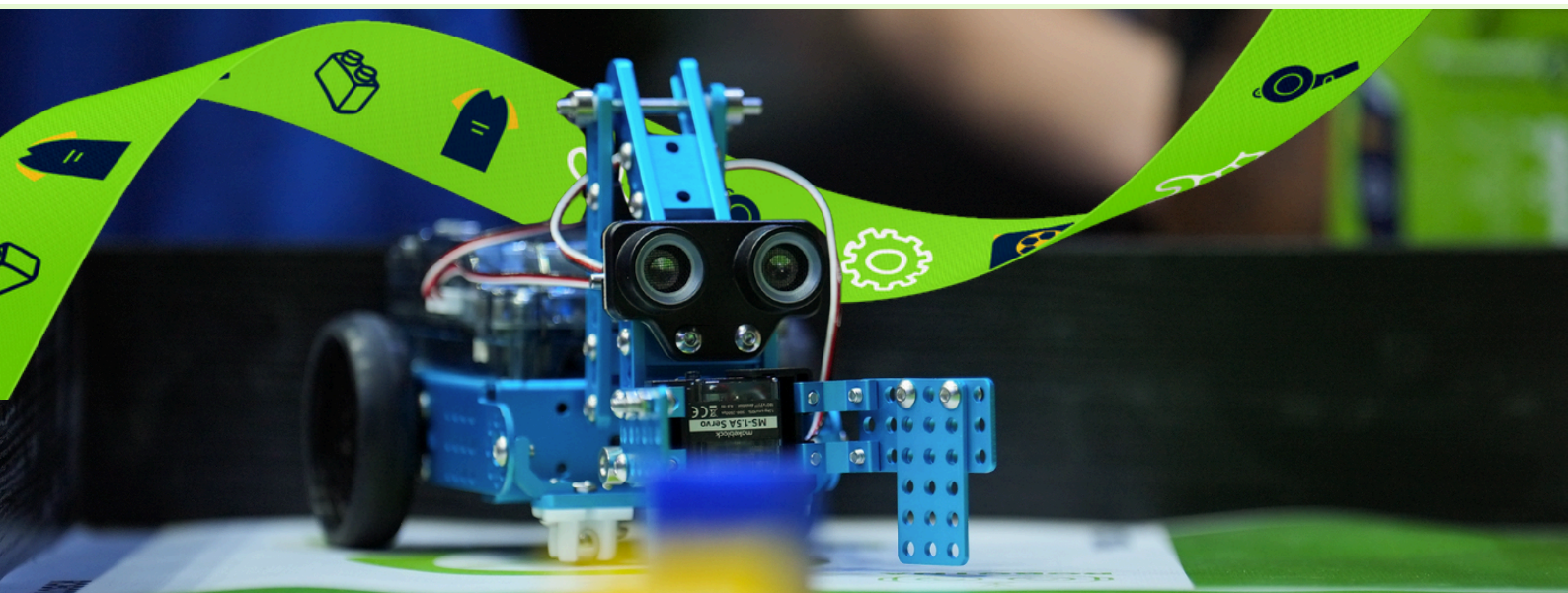


# What is the Competition?

## RFO 4.0 *INTERNATIONAL*

The Robo Football Olympiad (RFO) is an educational, competitive event that simulates football matches using robots designed and programmed by school students across specific age groups.

Teams face challenges that combine technical, mechanical, and strategic tasks—such as collecting cubes, scoring goals, and clearing balls—while following defined rules on a fixed playing field.



RECAP VIDEO



AL JAZEERA COVERAGE





AL ARABIYA COVERAGE



## Participant Categories

The competition is divided into two levels based on age and skills:

Level	 Junior	 Senior
Age Range	12-9 year	17-10 year
Expected Skills	Basic programming, building simple robots, using one or more sensors	Advanced coding, mechanical design, applying multi-strategy gameplay

This ensures fair competition and matches students' technical ability with their age group.

## Educational and Technical Goals

The RFO aims to:

- Foster logical and engineering thinking among students.
- Develop skills in programming, design, teamwork, and problem solving.
- Reinforce robotics as an interactive educational tool.
- Introduce principles of physics, motion, and control in an engaging, competitive setting.
- Encourage creativity and innovation over rote learning, through dynamic and evolving rules.





## Competition Format

The tournament combines a group stage and knockout rounds, depending on the number of teams.

### 1 Group Stage

- Teams are placed into equal-sized groups.
- Each team plays against all others in its group ("round robin").
- Rankings are based on points, then goal difference, then head-to-head, then least penalties. If still tied, a public draw is held.



0

Loss

+1

Draw

+3

Win

### Ranking of teams within the group

- At the end of group matches, teams are ranked according to the following order:
- Total points earned.
- If two or more teams are tied on points, the following are considered:



### IN CASE OF A TIE

- Goal difference in all matches (points scored – points conceded).
- Then, the result of the direct match between the tied teams.
- Then, the number of warnings or penalties (the team with fewer infractions is ranked higher).
- If the tie persists, a public draw is held in the presence of team representatives to decide the qualifier.



## 2 Stage Two: Knockout Rounds (Elimination)

After the group stage, the qualifying teams advance to the final rounds in a direct elimination format, as follows:

The first and second place teams from each group qualify. In some cases, the best third-place teams may also qualify to maintain balance.

If a match ends in a draw in the knockout rounds, penalty kicks are used, as explained in the “**Penalty Kicks**” section.



The knockout stage begins according to the number of qualifying teams, as follows:

**Semi  
finals**

if only 4 teams qualify.

**Quarter  
finals**

if 8 teams qualify.

**Round  
of 16**

if 16 teams qualify.

Teams play elimination matches, where the winner advances to the next round and the loser is immediately eliminated from the tournament.

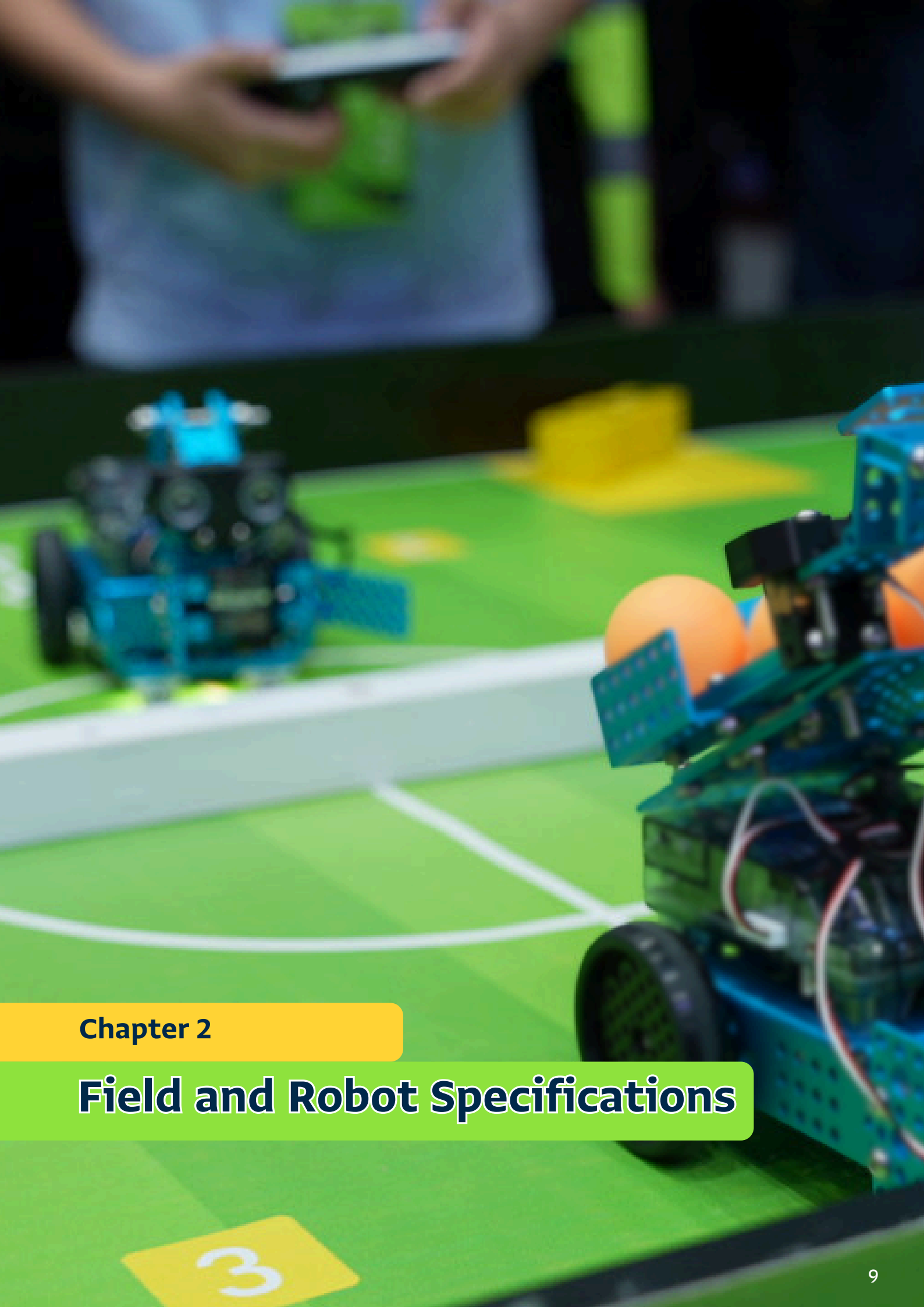


### PENALTY

If a match ends in a tie, penalty kicks are taken. This applies to all knockout matches, as outlined in the Penalty Kicks section of this guide.





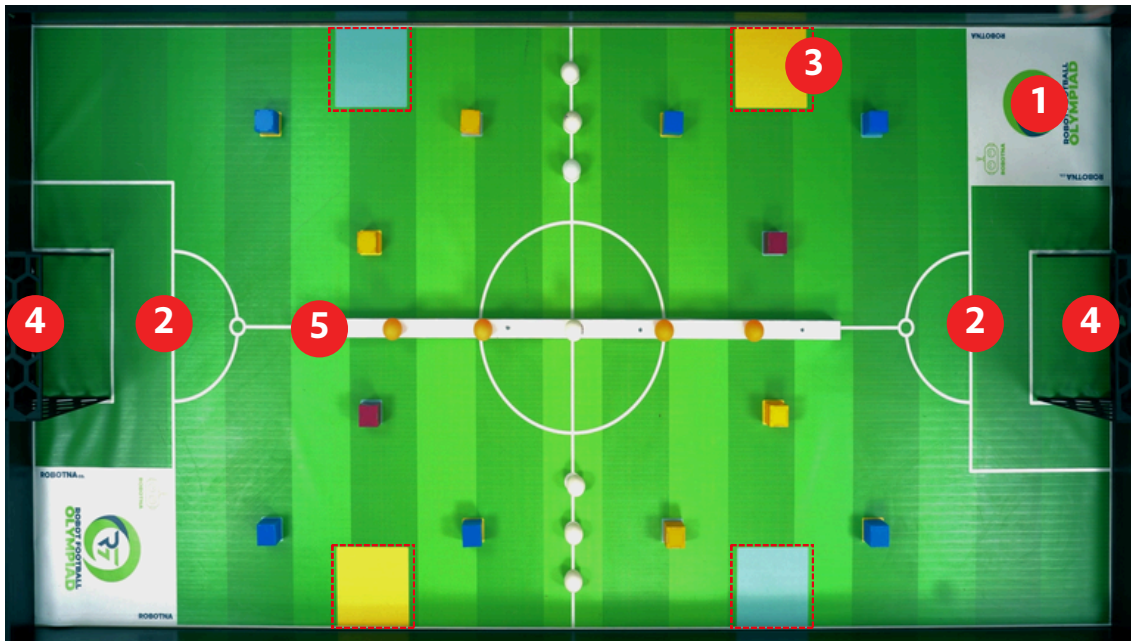


## Chapter 2

# Field and Robot Specifications

## The Field and Its Components

Matches of the Robo Football Olympiad are played on a rectangular field divided into two equal halves by a white longitudinal line topped with a wooden divider called the "central barrier." Each half contains a set of precisely defined elements, which are:



### 1. Home Zone:

the area where the robot is placed before each half begins. In this area, the team may touch the robot, return it during the match, or make adjustments.



### 2. Penalty Area:

a rectangular zone in front of each goal. Robots are not allowed to enter it during the match except during the alignment phase.





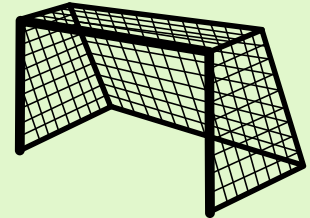
### 3. Collection Zone:

the area where cubes are placed after being collected. For full points, cubes must be placed in the collection zone that matches their color.



### 4. Goal:

a box-shaped net for scoring balls, located inside each team's penalty area. A goal is counted only if the ball fully crosses the goal line.



### 5. Central Barrier

a wooden divider placed on the white line between the two halves of the field. In the second half, several balls are placed on it, including orange balls and the white "Challenge Ball."



For further technical details regarding the field and its dimensions, refer to Appendix 1.

## Game Elements (Cubes and Balls)

The gameplay mechanism relies on a set of interactive elements that the robot interacts with during the match. These elements include:

### 1. Cubes:

five cubes in different colors (**yellow and blue**), distributed within the field before the match begins according to a random pattern announced beforehand.

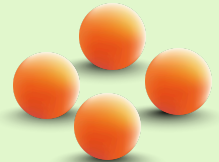
The cubes **must be collected and placed in the collection zone that matches their color**.

A purple cube is added in each area and acts as a **"trap cube."** It must not be moved to the collection zone. If it is placed there, **10 points are deducted** from the team.



### 2. Orange Balls:

they appear at the beginning of the **second half** and are placed on the central barrier. Each team must push these balls into the opponent's area to avoid point deductions, as **10 points are deducted** for every ball left in a team's area at the end of the match. The robot may redirect or throw the balls at any time during the second half.



### 3. White Balls:

three white balls are placed in each team's area at the beginning of the first half. The robot must score each ball separately in the opponent's goal. The team earns **30 points** for each ball only if it fully crosses the goal line. At the beginning of the second half, a white **"Challenge Ball"** is added to the middle of the central barrier along with the orange balls, shared by both teams. The team that scores it **earns 30 points**. If it is not scored at all, **10 points are deducted from the team whose area it remains in**. Both teams may score it up to a **maximum of three times**.



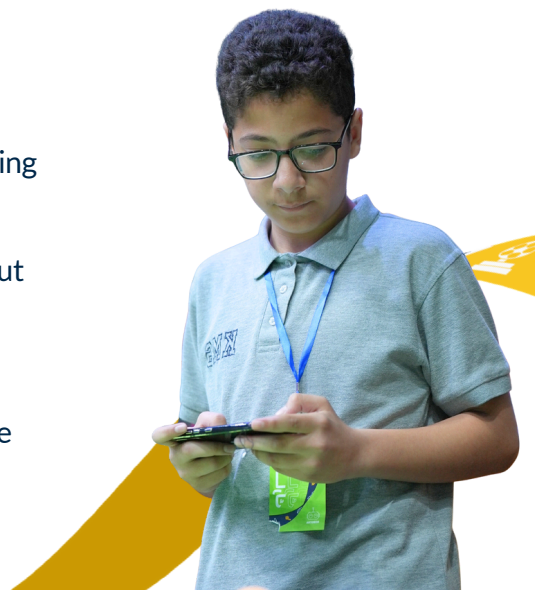


## Types of Robots and Participation Conditions

Teams are **free to choose the type of robot** used in the competition, provided they comply with the rules of each category (**Junior/Senior**), ensuring fair opportunities and fostering both educational and innovative aspects.

### Beginner Category (Junior)

- Any type of educational robot may be used, provided it is controlled through a manual controller or simple programming interfaces such as Scratch or graphical applications.
- Robots must be directly controlled during the match, without autonomous programming.
- Robots such as LEGO Spike Prime, LEGO EV3, VEX GO, Arduino, or manually built robots with simple techniques are encouraged.



### Advanced Category (Senior)

- Robots must be fully autonomous and operate without any human intervention once activated at the start of the half.
- The use of controllers or direct interference during the match is not permitted.
- Robots built using LEGO Spike Prime, VEX IQ/V5, Arduino, Raspberry Pi, or any other platform developed within safety and size standards are accepted.



## Technical Specifications of the Robot

Teams are free to choose the type of robot used in the competition, provided they comply with the rules of each category (Junior/Senior), ensuring fair opportunities and fostering both educational and innovative aspects.



### ITEM

### SPECIFICATION

Maximum Dimensions	The robot must not exceed 25 × 25 × 25 cm at the start, and 35 × 35 × 35 cm after leaving the Home Zone.
Maximum Weight	No official limit, but recommended not to exceed 2 kg for field safety.
Power	Only rechargeable batteries are allowed. External power sources or overcharged batteries are prohibited.
Maximum Motors	A maximum of 5 motors may be used, whether for movement or operating other parts.
Connectivity	Wireless communication (Bluetooth/Wi-Fi) is prohibited in the Senior category; allowed only for direct control in the Junior category.
Safety	Robots must not have sharp edges or parts that could harm other robots or damage the playing field.







## Chapter 3

# Match Instructions and Game Flow

## Preparation and Readiness

- The robot is prepared and placed in the Home Zone before the start of each half.
- Each team **must ensure that their robot is in the correct operating mode before the match begins.**
- Teams are **allowed to make adjustments to their robot during the match**, but without stopping or interrupting the flow of play. Any time or technical losses resulting from this are the team's responsibility.
- The referee announces the random distribution pattern of the cubes (yellow, blue, and trap cube) before the match starts, and teams must adjust their strategies accordingly.

## First Half

### Cube Collection and Goal Scoring

- The first half lasts **75 seconds**.
- The robot is **allowed to move only within its team's half of the field.**
- Each team must **collect as many valid cubes as possible and place them in the collection zone that matches the cube's color.**
- A cube placed in the Home Zone by the robot **may not be returned to the field**; if this happens, **the cube does not earn points.**
- The **"trap cube"** must **not be placed in the collection zone**; doing so **deducts 10 points.**
- Robots may start scoring white balls into the opponent's goal during this half, but only **one ball may be scored at a time**, and no more than one ball can be scored in a single strike.
- Balls or cubes that enter their target zones after the referee's whistle **do not count.**
- After the half ends, both teams are given **30 seconds** to return their robots to the Home Zone and perform quick maintenance if necessary.





## Second Half

### Balls, Challenge, and Alignment

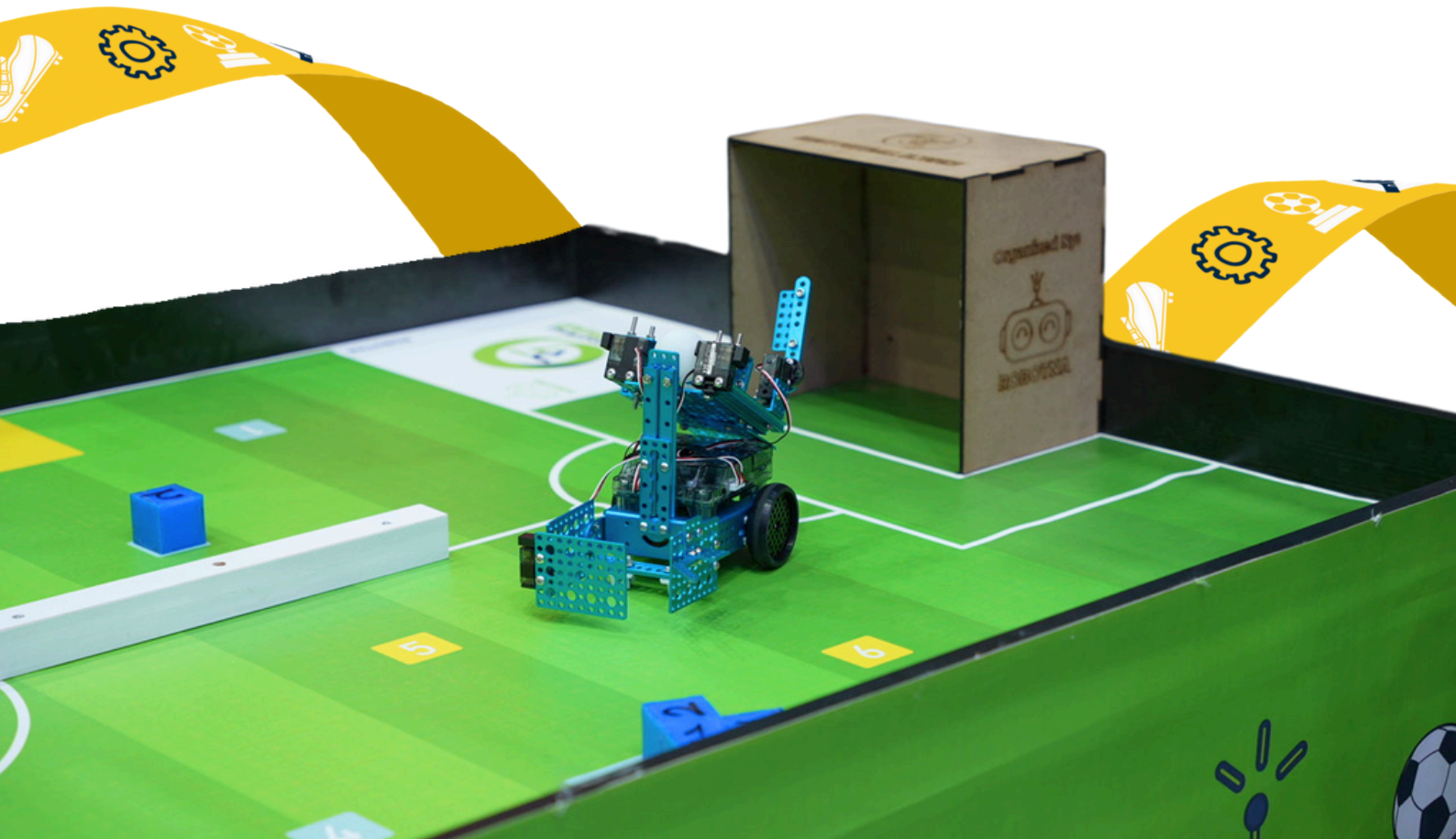
- The second half begins immediately **after the setup interval**.
- **Four orange balls** and the white Challenge Ball are **placed on the central barrier**.
- The objective of this half is to **push the orange balls into the opponent's zone** and **score the Challenge Ball in the opponent's goal**.
- Each orange ball remaining in a team's zone at the end of the half costs the team **10 points**.
- The Challenge Ball is worth **30 points** when scored and may be scored multiple times. If it is not scored at all, the team whose area it remains in loses **10 points**.
- The robot is **allowed to redirect and push balls at any time during the half**.
- The robot may continue collecting remaining cubes and moving them to the appropriate collection zones.
- In the last **15 seconds of the match**, the alignment stage begins:
- The robot **must line up inside the opponent's goal**.
- The team receives **30 points** for full alignment and **10 points** for partial alignment.
- The match ends with the referee's whistle, after which robotic penalty kicks are carried out if required by the result.
- Final scores are calculated and results are announced by the judging committee.





## Penalty Kick Mechanism

- Penalty kicks are **executed by placing the ball in the small circle** within the arc of the opponent's penalty area, and the robot starts from its **launch zone attempting to score in the goal**.
- The goal remains open during the kick, and **no robot or object may be placed to obstruct the opponent's shot or block the goal**.
- The robot is **not allowed to enter the penalty area during the execution**.
- The time allowed to take a penalty kick is **ten seconds**. If the robot exceeds this time, the kick is **considered missed**.
- Each team is **allowed three penalty kicks**. The team that scores the most wins.
- If the tie continues, **additional kicks are added with the execution time reduced by one second for each extra kick**.





## Chapter 4

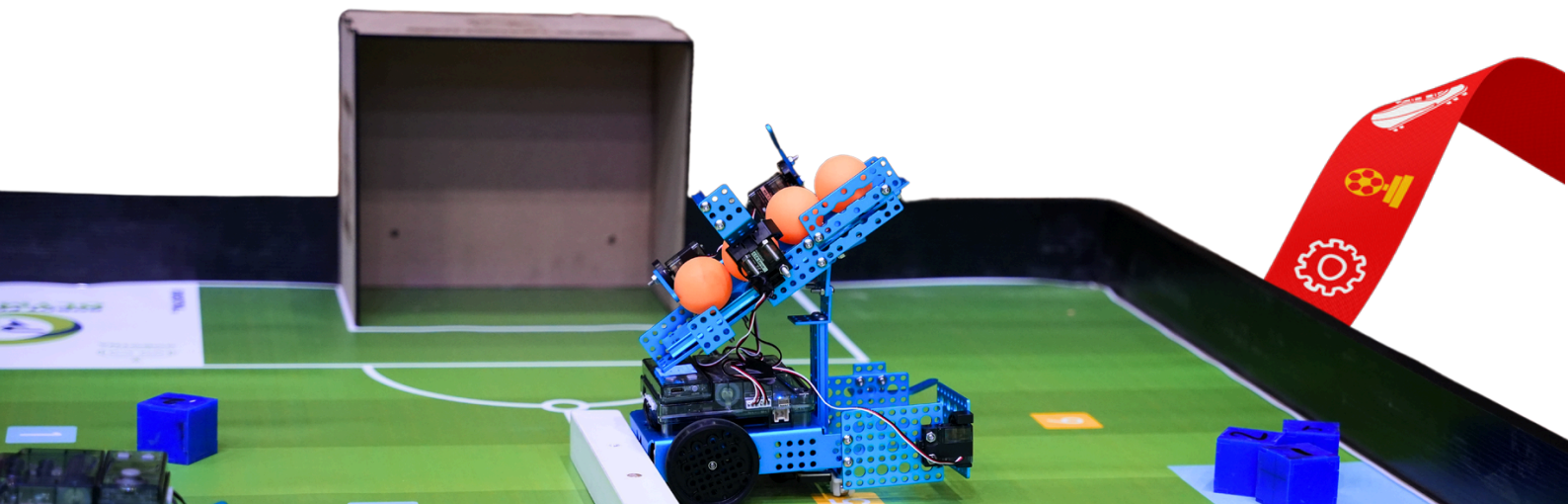
# Prohibited Zones and Sportsmanship Rules





## Special Instructions on Zones Prohibited for the Robot During Matches

- If a robot unintentionally enters a restricted area without affecting the opposing team, **10 points will be deducted from the team's score.**
- If such an entry impacts the opposing team, causing disruption or contact with any part of the opponent's field:
  1. **10 points will be deducted** for each **cube** that is touched or moved.
  2. **30 points will be deducted** for each **white ball** that is touched or moved.
- Penalty kicks will be awarded to the opposing team equal to the number of cubes and balls affected.
- The violating robot will be **returned to its designated starting area** and may continue the round.
- If a robot intentionally enters a restricted area without contacting any part of the opponent's field:
  1. The robot will be **returned to its starting area.**
  2. All cubes collected by the robot during the round will be returned to their original positions.
  3. The robot will be **prohibited from continuing the round.**
- If a robot **intentionally enters a restricted area** and this results in disruption or contact with any part of the opponent's field:
  1. **10 points will be deducted** for each cube touched or moved.
  2. **30 points will be deducted** for each ball touched or moved.
  3. Penalty kicks will be awarded to the opposing team equal to the number of cubes and balls affected.
  4. All cubes collected by the robot during the round will be returned to their original positions.
  5. **The robot will be prohibited from continuing the round.**





## Technical Infractions

These violations relate to the **specifications of the robot** and its compliance with the competition guidelines in terms of measurements, design, performance, and other technical requirements stated in this manual. They also include general safety violations that may endanger the robot, the team, or any of the participants. Such violations result in the **team being disqualified from participation and not permitted to compete against other teams**. This decision is determined by the Judging Committee and the Technical Committee supervising the competition.

## Behavioral and Ethical Violations

- A player or team member **placing objects inside the field to either assist or obstruct the robot**.
- **Arguing with the referee** in order to distract them or waste time.
- The **deliberate use of certain technologies** to interfere with the robot's performance.
- Any team acting in a way that affects the progress of the match, intentionally or unintentionally — for example: **touching the robot, moving cubes or balls, or any other disruptive actions**.
- If a robot intentionally causes harm, either directly or indirectly, to another robot or to the challenge field by **using harmful tools or devices**.
- Any team committing one or more of the above violations may be penalized with a **loss of the match, disqualification from playing it, or, in severe cases, exclusion from the competition**.

In the event of any conduct not explicitly mentioned in this manual, the Judging Committee reserves the right to take the appropriate decision after consulting with the team's supervisor. The committee's decision shall be considered final and binding.





## Chapter 5

# General Rules

## General Rules

- Each team's position at the table is determined **by a draw between the two teams.**
- During the match, teams are **not allowed to change their position on the field.**
- During the attack phase, the balls are placed to the right of each team.
- Each team must place their robot **inside the Home Zone** in any orientation they choose, provided that **no part of the robot extends outside the zone boundaries.**
- Teams may use any parts from the robot toolkit to calibrate the robot before starting, as long as **these tools do not extend beyond the Home Zone.**
- Robots are allowed to return to the Home Zone **during the match**, and teams may touch the robot within this zone to add any parts, provided that the **robot's height does not exceed the maximum allowed as specified in Chapter 2.**
- If any tools extend beyond the Home Zone, the rules for Restricted Areas apply to those tools, **as explained in Chapter 4.**
- Teams are **permitted to manually touch and return the robot to the Home Zone** during the match, with a penalty of **20 points** for each instance the robot is touched outside the zone boundaries.
- The referee **will remove the white balls** if they enter the opponent's playing area during the first half.





## General Rules

- If the robot scores more than one ball with a single strike, **only one goal is counted**.
- If a team attempts to score a ball that does not enter the goal and remains in the penalty area, **the referee will leave the ball in its place**.
- If a ball that did not score remains in the penalty area and collides with another ball causing it to enter the goal, **both balls are counted**.
- At the end of the match, upon hearing the referee's whistle, the **robot may be stopped manually if it does not stop on its own**, ensuring that no part of the field (cubes, balls, or the opponent's robot) is moved or altered.
- **No points are counted** after the whistle is blown.
- The Judging Committee counts the balls and cubes, calculates the points for each team, and discusses the results with the teams.
- After the match, **the final score is recorded on the evaluation form**, and the team leader signs it. The score is considered final and binding, and **no objections are allowed**.
- **Team A** is allowed to cross the cutter at the boundary of the blue zone, and **Team B** at the boundary of the red zone, provided that the length of the part crossing the cutter **does not exceed 4 cm**, as shown in **Figure (1.5)**.
- If a robot crosses the cutter from the opponent's zone, as described in the previous rule, **20 points are deducted from the team that crossed from the wrong zone**.

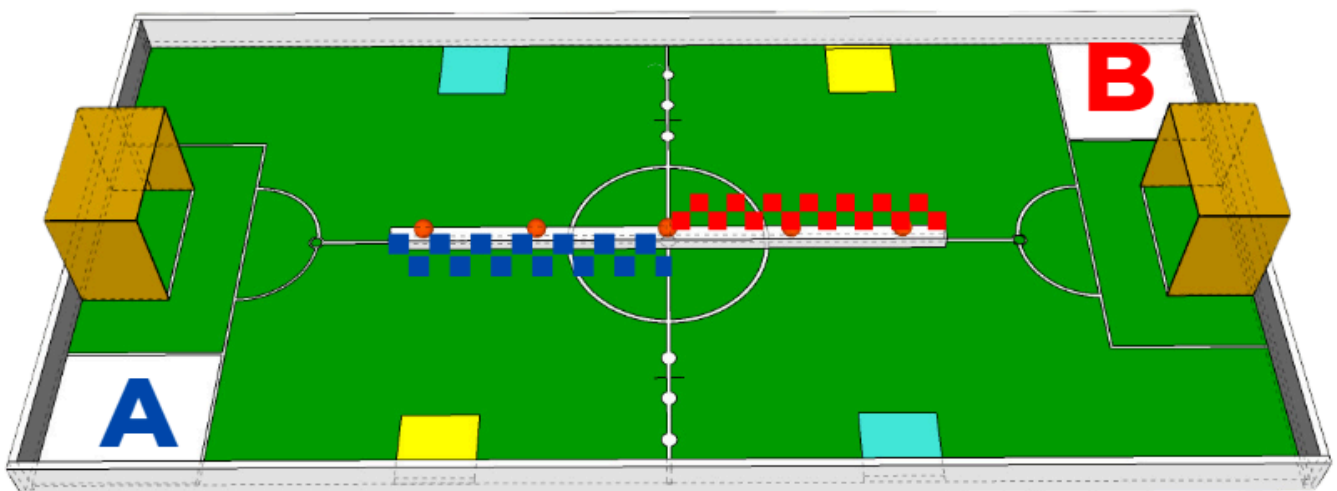


Figure 1.5



## General Rules

- The shaded blue area is not considered a restricted area for **Team A**, and the red-shaded area is not considered a restricted area for **Team B**, as shown in **Figure (1.6)**, during the allowed alignment period at the end of the second half.
- If the orange or white balls come to rest on the boundary line between the two teams' zones, or on the extension of the line connecting the edges of the penalty area, **they will not be counted for either team.**

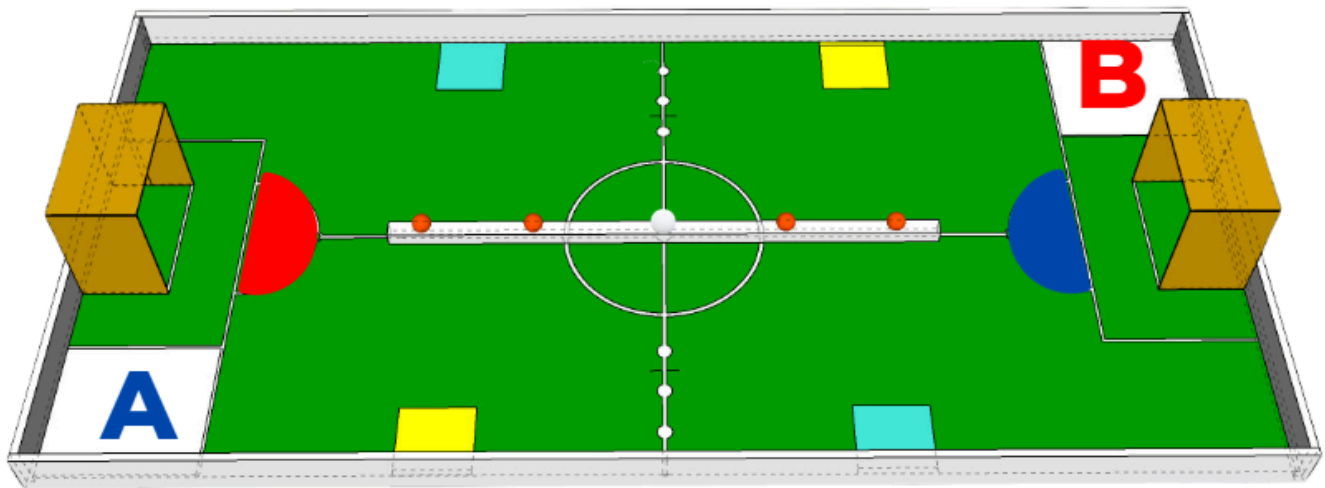


Figure 1.6





## Chapter 6

# Appendices



## Challenge Field Specifications

- The table dimensions are as follows: Internal dimensions: **(2.36 \* 1.14) meters**, with side heights ranging from **(7-9) cm**.
- There is a starting area for each team called "Home," with dimensions **(30 \* 30) cm**, surrounded by a white line with a thickness of **(1) cm**. Each team can only touch their robot within this area.
- There are two areas for collecting cubes, each measuring **(15 \* 15) cm**, as shown in the diagram. These areas are colored **(yellow and blue)**.
- There is a longitudinal divider in the center of the field that **divides** the field into two equal areas. This divider is **(114 cm)** long, **(3.2 cm)** thick, and **(3.2 cm)** high. **Five balls** are placed on this divider during the second round.
- There is also a **white line** that divides the field lengthwise, with a width of **(2 cm)**.
- There is a set of colored areas where the **yellow** and **blue** cubes are placed at the start of the match, according to a specific arrangement shown in **Figure (1)**.
- The dimensions of the goal are: length **28 cm**, width **17.5 cm**, and height **25 cm**.

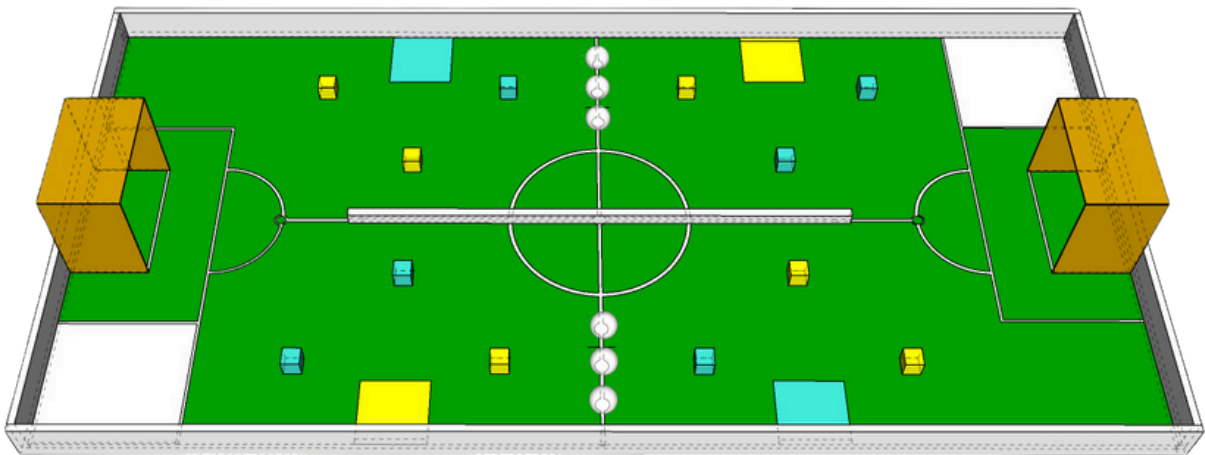


Figure (1.1)



## Scoring Mechanism:

- **10 points** for each blue or yellow cube placed in the correct collection area.
- **5 points** for each blue or yellow cube placed in the incorrect collection area.
- **30 points** for each ball fully crossing the goal line and being scored by the team.
- **30 points** for the robot completely aligning within the opponent's goal area in the **last 15 seconds** of the second half (**Challenge 3**).
- **10 points** for any part of the robot being inside the opponent's goal.
- **10 points** for each orange ball remaining in the team's area.
- **20 points** for the robot crossing the centerline or entering the opponent's goal area.
- **10 points** for each cube touched or moved in the opponent's area.
- **30 points** for each ball touched or moved from the opponent's area.
- **10 points** for each successful penalty kick made.



## Submission of the programming, design, and strategy video:

### Senior Category :

Teams in the senior category must submit a video covering robot programming, design, and match strategy.

The video should feature all team members, with each explaining their understanding of the robot's programming, design details, and strategy. They should also justify their choices and explain why they believe these will lead to success.

### Junior Category :

Teams in the junior category must submit a video covering the match strategy.

The video should feature all team members, with each explaining their understanding of the strategy, why they chose it, and how they believe it will help them win.

### :How to submit

The required video should be submitted as a link after being uploaded to YouTube. This link must be added to the project submission platform on the competition's website by Saturday, April 12, 2025.

**There will be awards for the winners in the categories of design, programming, and strategy, for the top three in each category.**



# Technical Inspection Form

Team Name: Team Number: 

Exceptional	Excellent	Good	Unsatisfactory	Not Visible
The mechanisms used to perform the required tasks, the engineering design of the robot, its suitability for the required tasks, and the utilization of components and parts.				
It shows a complete and detailed vision with creative thinking in the content.	There is a moderate level of vision and clarity in understanding the design and using most of the components.	There is a minimal understanding of the robot's engineering design and the use of some components.	There is no evidence of understanding the design, nor is there any use of the mechanical components.	Not visible at all
Optimal use of electronic components (sensors, controllers, motors) to achieve quality in task execution.				
Strong use of electronic components led to achieving high-quality results.	The way of using electronic components led to achieving satisfactory results in terms of quality and efficiency.	Moderate quality and efficiency resulting from the use of electronic components.	A minimum level of quality and efficiency resulting from the use of electronic components	Not visible at all
The programming language used, the students' proficiency in it, and its suitability for the engineering design.				
Strong proficiency from the students, with a strong and clear connection between the programming language and the engineering design.	The students' proficiency in the programming language and its somewhat relevance to the engineering design.	Little connection between the programming language and the engineering design, and little proficiency.	There is no evidence of the programming language being linked to the engineering design.	Not visible at all
The team's explanation of the engineering design and programming steps, and the participation of all team members in delivering the presentation.				
Clear explanation and strong rationale for the engineering design steps, with the contribution of all members.	Clear and convincing explanation with evidence of the engineering design steps, with the absence of contribution from all members.	Clear explanation of the engineering design, with the participation of most team members.	Partially clear explanation and partial participation from the members.	Not visible at all

## Design and Programming

The team has passed the first stage, 'Programming and Design Test.' We wish them success in the competency stage. The team did not pass the first stage, 'Programming and Design Test.' We wish them success in future competitions. 

Name and signature of the team supervisor

Name and signature of the referee





## Matches evaluation Table - RFO

FIRST TEAM	
TEAM NAME	
TEAM NUMBER	
ROBOT CODE	

SECOND TEAM	
TEAM NAME	
TEAM NUMBER	
ROBOT CODE	

FIRST TEAM			
The criteria on which the scores are based	Scores	Number	Total
The number of blue and yellow cubes in the correct place (10)	10		
The number of blue and yellow cubes in the wrong place (5)	5		
The number of goals scored (30)	30		
The robot's complete parking inside the goal	30		
The robot's partial parking inside the goal	10		
The orange balls in the team's area	10 -		
The penalty kicks that were scored (10)	10		
Violations: Robot contact/Crash/Restricted areas			
Total			

SECOND TEAM			
The criteria on which the scores are based	Scores	Number	Total
The number of blue and yellow cubes in the correct place (10)	10		
The number of blue and yellow cubes in the wrong place (5)	5		
The number of goals scored (30)	30		
The robot's complete parking inside the goal	30		
The robot's partial parking inside the goal	10		
The orange balls in the team's area	10-		
The penalty kicks that were scored (10)	10		
Violations: Robot contact/Crash/Restricted areas			
Total			

Name and signature of the first team's supervisor

Name and signature of the second team's supervisor

Name and signature of the referee





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