

ENJOY AI 2023 Season - Little Whale Tour Ancient City

Competition Rules

1 Contest Theme

The ENJOY AI 2023 season, "The World Tour" competition, revolves around the theme of world geography and incorporates a lot of the essence of world tourism culture. Through the integration of humanities, history, geography, and technology, the robot "Little Whale" will navigate through the maps of four continents, exploring renowned landmarks.

The competition highlights four representative countries from four continents: China, the United States, France, and Australia. By combining tourism culture with technology, it allows children and young individuals to establish a comprehensive understanding of world geography while utilizing artificial intelligence to create and showcase their skills through robots.

2 Competition Venue and Environment

2.1 Venue

The size of the competition venue is 120X220cm (Figure 1), made of PU fabric or printed fabric, with black guide lines approximately 2.5cm wide. A white dashed line divides the field in half, and robots from one side of the field are not allowed to enter the other side. The size of the two robot bases is 25X25cm.

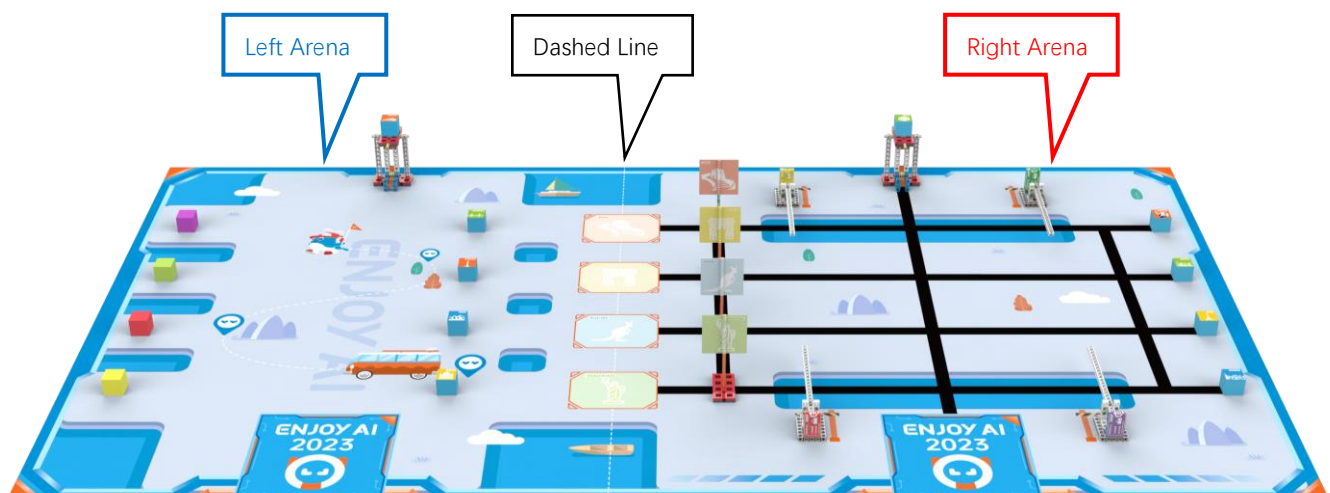


Figure 1: Competition Venue Layout Diagram

2.2 Competitive Arena Environment

The environment of the robot competition field should be protected by using cold light sources, low lighting conditions, and magnetic interference. However, due to the high level of uncertainty in general competition field environments, factors such as surface patterns and unevenness, cracks on the borders, and varying lighting conditions may be present. Therefore, participating teams should consider various measures in the design of their robots to address these challenges.

3 Robot Tasks and Scores

3.1 Set Off

3.1.1 The robot departs from the base.

3.1.2 If any robot completely exits the base and all vertical projections are outside the base, 20 points are awarded.

3.1.3 This task can only score once throughout the entire competition.

3.2 Collect the Pass Permits

3.2.1 On the left side of the field, there are four small cubes of various colors (approximately 3.5cm in length) placed, representing the pass permits.

3.2.2 The robot starts from the base and collects the small cubes on the field. Each small cubes that enters the base earns 10 points.

3.2.3 The criteria for a cube to count as successfully entered the base are as follows:

- a) The cube is partially or entirely vertically projected within the base.
- b) The robot is partially or entirely projected within the base, and the cube is within the projection

range of the robot.



Figure 2 Initial state

3.3 Pass Through Checkpoints

3.3.1 Place four checkpoints (in four different colors) on the right side of the field, with the poles in horizontal position.

3.3.2 The participating players manually place the small cubes obtained from task 3.2 into the corresponding checkpoints according to their colors. The pole rises, and each successfully placed small cubes earn 5 points.

3.3.3 If the color does not match, the referee will remove the corresponding cube, and the pole will return to a horizontal position. This task does not affect the score of task 3.2.

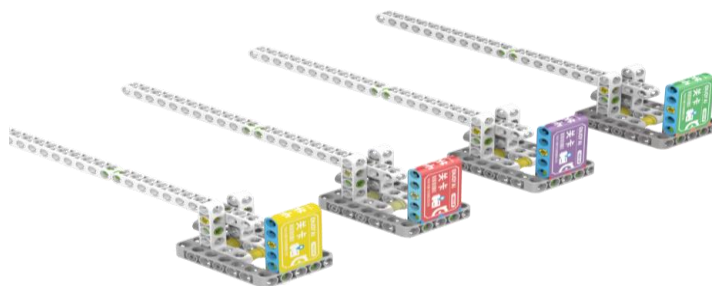


Figure 3: Initial State

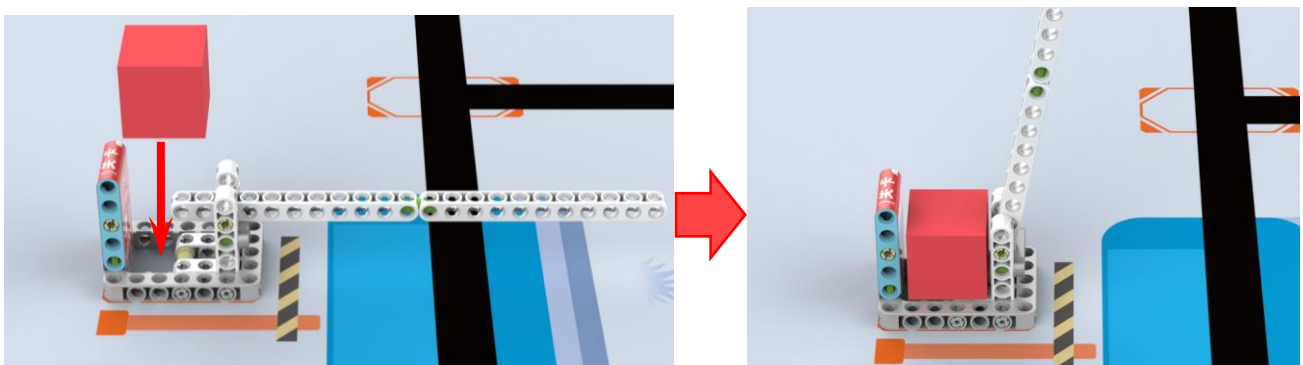


Figure 4: Completion Status

3.4 Countries Arrival

3.4.1 Place 4 models with city symbols on the right-hand side of the field, as shown in Figure 5.

3.4.2 The robot will push the corresponding national symbols into the designated country's box (including the box boundaries). Each country reached earns 15 points, as shown in Figure 6.

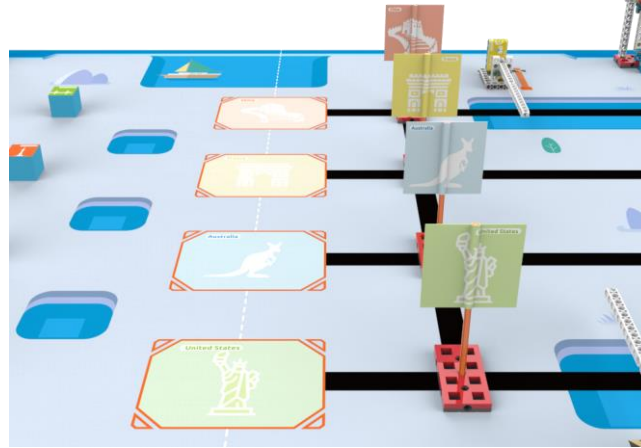


Figure 5: Initial State

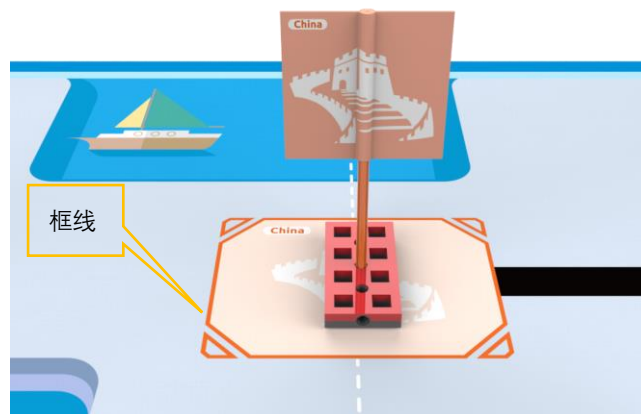


Figure 6: Completed State

3.5 Obtain Tickets

3.5.1 On both sides of the field, there are a total of 10 blue cubes (approximately 3.5cm in length) with attractions graphic on them. Two of these cubes are placed on the model, while the remaining eight are placed on the field, as shown in Figure 10.

3.5.2 The robot will bring back the eight cubes from the field to the base. Each cubes are worth 5 points. The robot will also bring back the two cubes from the model to the home base. Each of these cubes are worth 15 points.

3.5.3 The criteria for an attraction cube to count as successfully entering the base are as follows:

- a) The cube is partially or entirely vertically projected within the base.
- b) The robot is partially or entirely projected within the base, and the cube is within the projection range of the robot.

3.5.4 The positions of the attraction cubes are random, and the final positions will be announced before the competition.



Figure 7: Illustration



Figure 8: Models and Blocks

3.6 Attractions Tour

3.6.1 The correct match of cities and attractions is shown in Figure 9. The robot should place the cubes obtained from task 3.5 into the corresponding cities (where the cubes' vertical projections are partially or

completely inside the boxes). Each successful placement earns 10 points, as shown in Figure 10.

City	China	France	Australia	America
Tourist Attraction	The Forbidden City, Oriental Pearl Tower, Base of Giant Panda.	Louvre Museum, Eiffel Tower	Opera House, Great Barrier Reef	The Golden Gate Bridge, Yellowstone, Mount Rushmore

Figure 9: City Attractions Comparison Table

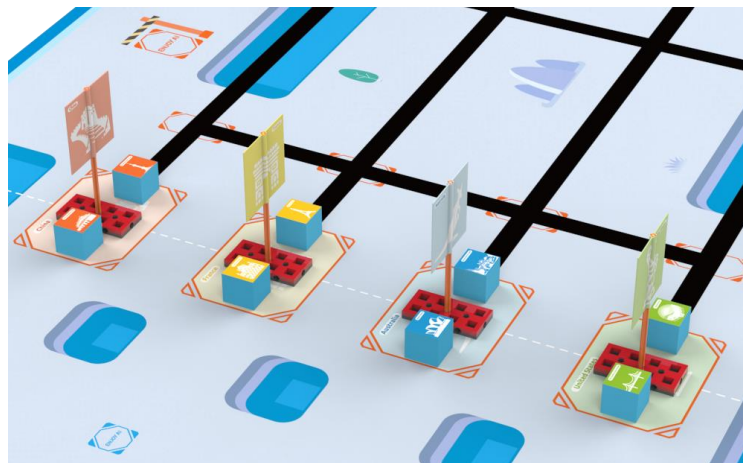


Figure 10: Schematic Diagram

3.7 Tour Completed

3.7.1 Before the end of the competition, if a robot autonomously or remotely returns to the home base and does not continue with the next task, that robot will earn 20 points for reaching the home base.

3.7.2 If any robot remains inside the home base throughout the competition, no points will be awarded.

4 Robot Requirements

4.1 Robot Dimensions: Before leaving the base, the robot's size must not exceed 25cmx25cmx25cm (length * width * height). Once completely out of the base, the robot's structure is allowed to self-expand.

4.2 Controller: In the single-wheel competition, each group of students can use a maximum of 2 robots,

and each robot is only allowed to use one controller. Changing controllers during the competition is not permitted.

4.3 Motors: Each robot is only allowed to use the two motors connected to the robot controller and cannot use external motors.

4.4 Sensors: Each robot is allowed to use any type and quantity of sensors.

4.5 Structure: The robot must use a plastic modular structure and is not allowed to use zip ties, screws, rivets, glue, tape, or any other auxiliary connecting materials.

4.6 Power Supply: Each robot must have its own independent battery box and cannot be connected to an external power source. The battery voltage must not exceed 5V, and circuitry such as boosting, reducing, or stabilizing the voltage is not permitted .

5 Teams Requirements

5.1 Participating Team

5.1.1 Each participating team consists of 2 students. The students must still be enrolled in school as of June 2023.

5.2 Competition Rules

5.2.1 The competition is divided into the preschool group and the lower-grade elementary group (1st and 2nd grade) for the competition.

5.2.2 There are no preliminary rounds or semifinals in the competition. The organizing committee ensures that each participating team has the same number of appearances, not less than 2 times, and scores are recorded for each appearance.

5.2.3 During the competition, teams can use remote controllers to operate the robots to complete tasks. They can also use a reading pen to read coding cards and control the robots.

5.2.4 After the completion of all matches, the total score of each participating team from each match is

calculated as the team's final score, and teams are ranked based on the total score.

5.2.5 The competition organizing committee may change the competition rules based on the actual registration and venue conditions.

5.3 Competition Process

5.3.1 Building Robots and Programming

5.3.1.1 Programming and debugging can only be done in the debugging area.

5.3.1.2 Participating team members can bring their already built robots into the preparation area. Team members are not allowed to carry USB drives, CDs, wireless routers, mobile phones, cameras, or any other storage or communication devices.

5.3.1.3 Participants are not allowed to access the internet or download any materials in the debugging area. They are prohibited from using cameras or any other devices to take pictures of the competition area and are not allowed to contact coaches or parents in any way .

5.3.1.4 Throughout the entire competition, participating students have a certain amount of time for debugging and programming.

5.3.1.5 After each round of the competition, participating teams are allowed to perform simple repairs on their robots and modify control programs in the preparation area. However, they cannot disrupt the order of the next round of appearances.

5.3.2 Preparation

5.3.2.1 When preparing to enter the field, team members receive their own robots and, guided by the referee, enter the competition area. Prior to the start of the match, participating teams have 1 minute to inspect the placement of the mission models on the field.

5.3.2.2 The student team members who are on deck stand near the holding area.

5.3.2.3 Team members place their robots in the holding area. Before the robot is activated, no part of the

machine or its projection on the ground can extend beyond the home base.

5.3.2.4 After completing the preparations, team members should signal the referee.

5.3.3 Launch

5.3.3.1 After the referee confirms that the participating team is ready, they will give the countdown command "3, 2, 1, start." Only after the referee says "start" can the team members activate the robot.

5.3.3.2 Starting the robot before the "start" command will be considered a "false start" and may result in a warning or penalty.

5.3.3.3 Once the robot is activated, it can only be controlled by commands. Team members are not allowed to touch the robot, otherwise, it will be considered a retry.

5.3.3.4 Once the robot is started, intentionally detaching parts or dropping mechanical components on the field is not allowed. If a robot part accidentally falls off, the participating team should retrieve it themselves.

5.3.3.5 If the robot completely exits the competition field, it will be counted as a retry. Team members need to bring the robot back to the home base and restart it.

5.3.4 Retry

5.3.4.1 After the robot completely leaves the home base, if a team member touches the robot with their hand, it is considered a retry.

5.3.4.2 After the retry, the field remains in the same state. If a retry is performed due to an incomplete task, the props used for that task remain in their previous positions and do not return to their initial positions. During the retry, Team members must move the robot back to the home base and restart it.

5.3.4.3 There is no limit to the number of retries allowed per match.

5.3.4.4 The timer does not stop or reset during the retry. Tasks that the robot had already completed before the retry are counted as valid. However, the scoring models carried by the robot at that time

become invalid and are kept by the referee until the end of the current round; the timer does not pause during this process.

5.3.5 Return to Base Autonomously

5.3.5.1: The robot returning to the base under instruction control (including remote control) does not count as a retry.

5.3.5.2: The criteria for the robot to autonomously return to the base: The vertical projection of any part of the robot's structure is within the base range.

5.3.5.3: After the robot autonomously returns to the base, team members can interact with the robot and make changes or repairs to its structure, as well as modify the instructions.

5.3.5 End of Competition

5.3.6.1 Each game lasts for 180 seconds.

5.3.6.2 If a participating team does not intend to continue the game after completing certain tasks, they should signal to the referee, who will then stop the timer and end the game. Otherwise, the referee will indicate the end of the game after 180 seconds of starting the timer.

5.3.6.3 After the referee signals the end of the game, any points earned by the robot for completing tasks will be considered invalid.

5.3.5.4 The referee is obligated to inform the team members of their scoring results. Team members have the right to correct any potential errors in the referee's scoring operation. After confirming the accuracy, they should sign to acknowledge their scores. In case of disputes, the matter should be brought to the attention of the chief referee for arbitration. The referee will fill out the scoring sheet, and team members should confirm their scores.

5.3.5.5 Team members should restore the field to its pre-start condition and immediately move their robots back to their assigned seats in the debugging area.

6 Scoring

6.1 After each match, the score will be determined based on the completion of tasks on the field. If a task that has been completed is accidentally destroyed by a robot or a participating team member before the end of the match, no points will be awarded for that task.

6.2 The order of completing tasks does not affect the individual task scores.

6.3 If there are no retries during the match, a bonus of 20 points will be awarded for smooth completion; 15 points for 1 retry; 10 points for 2 retries; 5 points for 3 retries; deduction will be made.

6.4 During the competition, teams can control the robot remotely using a controller; they can also use a coding pen to read coding cards and control the robot. The method of completion on the left does not have any impact on the scoring coefficient of the competition.

If the right side of the field, competitors use a gamepad controller, tablet, or smartphone to control the robot, the scoring coefficient is 0.7, example:

$$\text{Final Score} = \text{Total Tasks Completion Scores (Includes retries awards)} * 0.7$$

If the contestants on the right side use a stylus to read instruction cards and program the robot using the programming board to complete the tasks, the scoring coefficient is 1, example:

$$\text{Final Score} = \text{Total Tasks Completion Scores (Includes retries awards)} * 1$$

If both scoring coefficients have been used on the right side of the field, the calculation will be based on the lower scoring coefficient.

7 Foul and Disqualification from the Game

7.1 Teams that arrive late will be penalized 10 points for every minute of delay. If the team is still not present after 2 minutes, they will be disqualified from the competition.

7.2 The first false start will result in a warning from the referee. The robot must return to the starting area and start again, with the timing reset. The second false start will result in disqualification from the

competition.

7.3 Separating components for strategic purposes is considered a violation and may result in disqualification, depending on the severity of the situation.

7.4 If the robot causes damage to the field facilities by colliding at high speed, a warning will be given by the referee. The second instance of damaging the field facilities will result in disqualification.

7.5 If a team member or the robot causes damage to the competition models, whether intentional or unintentional, a warning will be issued. The affected task will not score any points, even if it has been completed.

7.6 During the competition, intentionally touching the competition models outside the base on the field will lead to disqualification. Accidental contact may not be considered a violation unless it directly affects the final score of the competition.

7.7 Failure to comply with the referee's instructions will result in disqualification.

7.8 Contacting the coach or parents without the permission of the head referee will result in disqualification.

8 Prize

8.1 Each group is ranked based on the total score.

If there is a tie in the ranking, the following criteria are used to determine the order:

- (1) The team with the least total time across all sessions comes first.
- (2) The team with the fewer number of retries across all sessions comes first.
- (3) The team with the higher total number of completed tasks across all sessions comes first.
- (4) The team with the highest score comes first.

8.2 The ranking of the participating teams determines the award levels (zero points and forfeits are not

included in the ranking). The awards are as follows: champion, runner-up, third place, first prize, second prize, and third prize.

Attachments :

ENJOY AI 2023 Season - Little Whale Tours the World				Round __	
Serial number		Team Name		group	

Task	describe	Score	quantity	Score
Set off	Any robot completely moves out of the base	20		
Collect the Pass Permits	Tickets (cubes) collected back to the base	10 points/piece		
Pass through Check Points	Cubes placed on the checkpoints corresponding to the color	5 points/piece		
Countries Arrival	The flags are within the frame line of the corresponding countries	15 points/piece		
Obtain tickets	The cubes with the attraction graphics on the field are brought to the base	5 points/piece		
	The cubes with the attraction graphics on the checkpoint model are brought to the base	15 points/piece		
Attractions tour	Place the cubes with the attractions to the corresponding city	10 points/piece		
Tour complete	The last robot is back to base	20		
Retries bonus	20-(number of retries)*5, and greater than or equal to 0			

Score factor	* 0.7 _____ * 1.0 _____	Task score	
Final score			
Single round time used			
score confirmation			
I have confirmed that the above game score record results are true and valid without any objection.			
Participants:		referee:	
Questions and Remarks			
Head referee:		Enter:	