

2024 TIRT Korfball by Humanoid Robot

Competition Regulations

2024.0628版

A. Origins of the Project :

ShaYangYe is committed to advancing robotics education and promoting industry collaboration, with the aim of establishing Taiwan as an international stage for robotics competitions. Since 2018, we have collaborated with the Taoyuan City Government to organize the INTERNATIONAL ROBOTIC FESTIVAL IN TAOYUAN for six consecutive years. This pioneering event brings together four major robotics competition fields: land, sea, air, and maker. Over the past six years, it has attracted over 12 million participants both online and offline, with teams from 20 countries participating and a total of 9,400 teams from domestic and international regions. Our goal is to connect robot training and competitions with relevant industries, expand the international perspectives of Taiwanese participants, and create a cross-domain international robotics extravaganza that shines in Taoyuan and the world!

For the 2024 INTERNATIONAL ROBOTIC FESTIVAL IN TAOYUAN, in order to promote Taiwan's robotics industry and self-made brands, we are planning a series of events, including the TIRT Autonomous Vehicle Racing Competition. This competition combines diverse control systems to showcase Taiwan's technological prowess in intelligent manufacturing. Furthermore, it serves as a link to the TIRT International Competition and Conference!

B. Objectives of the Project :

1. By organizing competition activities and facilitating learning exchanges, we aim to provide domestic and international teams with opportunities to observe and learn about programming, mechatronics integration, and knowledge sharing, thereby inspiring students' motivation to learn.
2. By incorporating diverse open control systems, we plan to design different competition targets that foster the development of students' creativity, design skills, integration abilities, and programming capabilities.

C. Guiding Organization :

Taoyuan City Government, Taoyuan City Council

D. Host Organization :

Department of Economic Development, Taoyuan

E. Executing Unit :

SHAYANGYE Cultural & Educational Foundation

F. Participants:

1. Students from primary schools, junior high schools, senior high schools, vocational schools, and colleges/universities in all counties and cities nationwide are eligible to participate, including master's and doctoral students.
2. Participants must have a valid student status recognized by the Ministry of Education.
3. International teams of the same age are allowed to **participate (proof of valid student status from their respective country is required)**.

G. Competition Event

Korfball by Humanoid Robot



TIRT Official website.

H. Competition Categories

Mixed Age Group: Limited to students from elementary schools, junior high schools, high schools, vocational schools, and colleges/universities (including master's and doctoral students) to participate. Each team can have a maximum of 3 participants.

I. Event description and schedule planning :

1. Registration Method: Visit the official TIRT website (<https://www.tirtpointsrace.org/>)
2. Registration Period: From May 1, 2024, to October 28, 2024 (subject to adjustment based on team registrations).
3. Competition Date: November 9, 2024
4. Competition Venue: Taoyuan Stadium (No. 1, Section 1, Sanmin Road, Taoyuan District, Taoyuan City)

J. Other Matters:

The organizer reserves the right to modify the regulations and provisions of the competition. For any matters not specified, the latest announcements by the organizer on the official competition website shall prevail. If there are any doubts or inquiries regarding this program, please contact the organizer at telephone number +1 03-3623452, extension 5338, Mr. Qin, or the main line at extension 9.

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Competition Rules

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A. Eligibility :

The participants must be students with a valid enrollment status recognized by the Ministry of Education.

B. Competition Vehicle Regulations :

1. The robot must have a humanoid structure consisting of a head, torso, two hands, and two feet. The head and torso have no functional requirements and can be designed for aesthetics. The robot must move in a walking manner and is not allowed to use wheel or track-based propulsion methods.
2. The robot must shoot baskets by throwing the ball using its body movements. The use of launching mechanisms for shooting is not allowed. For special designs, participants should consult the organizers in advance, and the final determination will be made by the organizers during the inspection.
3. The robot must obtain power through self-carried batteries.
4. The robot is operated using an offline or wireless remote control (such as PS, Bluetooth, etc.).
5. The robot's height must be below 50cm, and its weight must be below 3kg.
6. The width of the robot's leg split must not exceed 65cm, and the robot's foot size must not exceed 8cm x 13cm.
7. The robot's arms, when fully extended, must not exceed 65cm.
8. If the robot changes its geometric shape during movement, it must still comply with the above-mentioned requirements.
9. Participants are allowed to mark or decorate their own robots for better visual identification.
10. The robot must not damage the competition venue or props during the competition.

C. Competition Rules :

1. All participants must complete the registration and check-in process. The competition order and race venue will be determined through a lottery system. The competition will take place in the order determined by the lottery. After the machines have been checked, they must be placed in the designated area as specified by the organizers. No adjustments or modifications to the robots are allowed once the check-in process is complete.
2. The competition order will be determined by the relevant referee staff. Teams will enter the competition area in the designated order. At any given time, only two teams will be competing on the field.
3. Each team will take turns to shoot the ball into the basket. The balls used in the competition are ping pong balls, with each team having a different colored set of 20 balls.
4. Each competition is limited to one operator who will place the robot in the starting area. The preparation time is limited to 1 minute, during which the robot cannot be powered on, and adjustments to the hardware mechanism are allowed. If the preparation is completed before the time limit, the operator can raise their hand to signal readiness. Once confirmed by the referee, the competition begins.
5. During the competition, each team is allowed one opportunity to request maintenance from the referee. There is no time limit for making the request, and the competition does not stop. If maintenance is required, the team must raise their hand to signal the referee and, upon the referee's permission, remove the robot from the competition area for maintenance (to the designated space beside the competition area, not to the rest area). After completing the maintenance, the team must raise their hand to signal the referee, and upon confirmation by the referee, they can place the robot back in the starting area to resume the competition (programming is prohibited, and maintenance is limited to hardware mechanisms, such as battery replacement or servo motor repair).

6. Each competition has a time limit of 3 minutes. Once the robots are activated, participants are not allowed to touch the robots without the referee's permission. Violation of this rule will result in disqualification.
7. Both robots need to move to a designated ball retrieval point to collect the balls. After retrieving the balls, they can throw the balls from any location to score in the in-field basket. The team with the highest number of successfully scored balls within the competition time limit will be the winner. If both teams achieve the maximum score within the time limit, the team that finishes the task faster will be declared the winner. In the event of a tie, a sudden death shootout will take place, and the first team to successfully score 1 ball will win.
8. A ball that bounces out of the basket will not be counted as a score. If the ball lands in the opponent's court or outside the designated boundary (white line frame), it will be considered a failed attempt.
9. During the competition, if a ball falls within the team's own court (within the white boundary lines), the team is allowed to freely manipulate the robot to pick up the ball and make another shot.
10. During the competition, robots are not allowed to enter the opponent's court. Violators must immediately cease operations and remove the robot from the court. The score of the violating team will be calculated based on the moment of ceasing operations.
11. During the competition, our robot is not allowed to touch the opponent's robot. Violators will be disqualified.
12. During the competition, the robot is allowed to touch the base of the ball rack and pick up balls from it, but it must not touch the ball rack (cylinder) or step on the base of the ball rack. Violators will be disqualified.
13. The organizer reserves the right to make adjustments to the competition format based on the number of participating teams.

14. The referee has the ultimate authority in the competition. In the event of any circumstances that cannot be explained by the rules on the competition day, the organizing committee reserves the right to provide interpretation, and the decision of the head referee shall be final and binding without any objection.
15. Do not damage the competition venue, props, or cause any contamination. Severe cases may result in disqualification from the competition.
16. After the start of each match, if a participant intentionally interferes with the opponent's throw, the match will immediately stop, and the opposing side will be declared the winner.
17. During the competition, the robot must be operated using wireless/offline remote control methods such as PS controllers or Bluetooth. If the robot falls during the competition, it must be remotely operated to stand up using wireless/offline remote control methods (PS controllers, Bluetooth, etc.). The use of laptops or tablets for control is prohibited.
18. The robot is only allowed to pick up one ball at a time, and it must complete the throwing action before picking up another ball. Any violation of this rule will result in disqualification.
19. If the robot goes out of bounds (falls outside the competition area) during the competition, the competition time will not stop. The player must raise their hand to signal the referee and, upon referee's approval, place the robot back in the starting area to continue the competition.
20. The on-site lighting conditions, temperature, humidity, ground elevation, and other uncontrollable environmental factors, as well as hardware spatial conditions, are part of the challenges for the players. These factors are not considered in determining the need for a rematch, and protests regarding the competition rules cannot be based on these factors.

D. Track and Props Description

1. The field is a square arena measuring 120cm by 120cm. Each team has a designated starting zone within the competition area, and there are two fixed ball retrieval zones.
2. In case of any disputes regarding the field during the competition, the interpretation of the on-site head referee shall prevail.
3. The dimensions of the track props are as shown in the diagram. :
 - a. Ball Rack Dimensions: Outer frame 50cm5cm; *Inner frame 3cm3cm*; Rack height 2cm

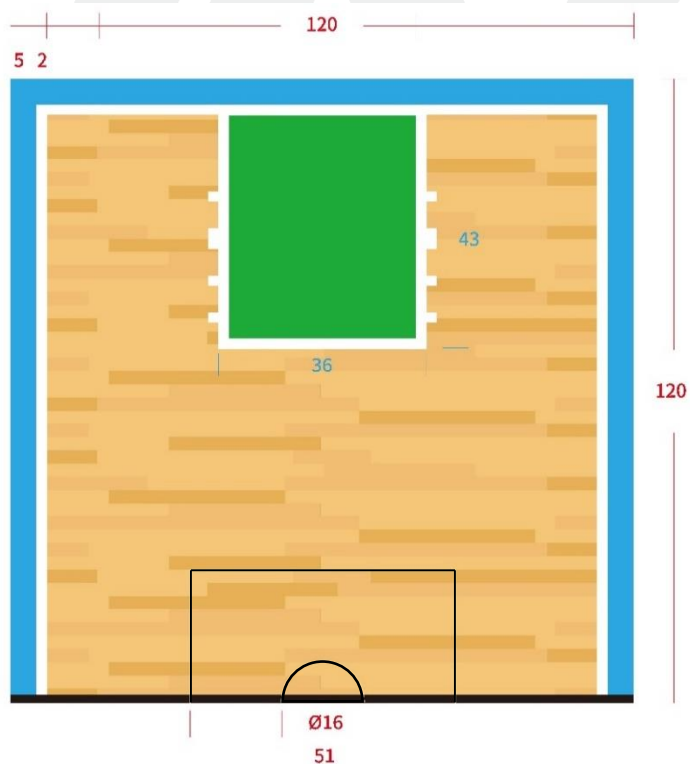


- b. Style of Placed Ball Rack :

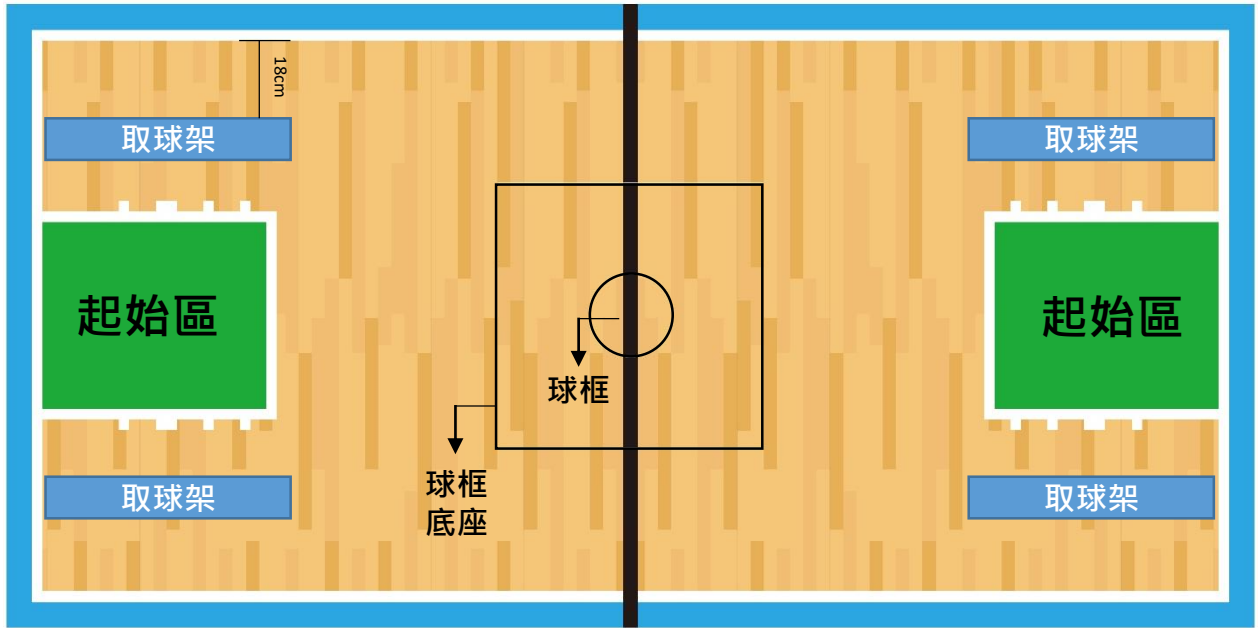


- c. Field Dimensions Diagram :

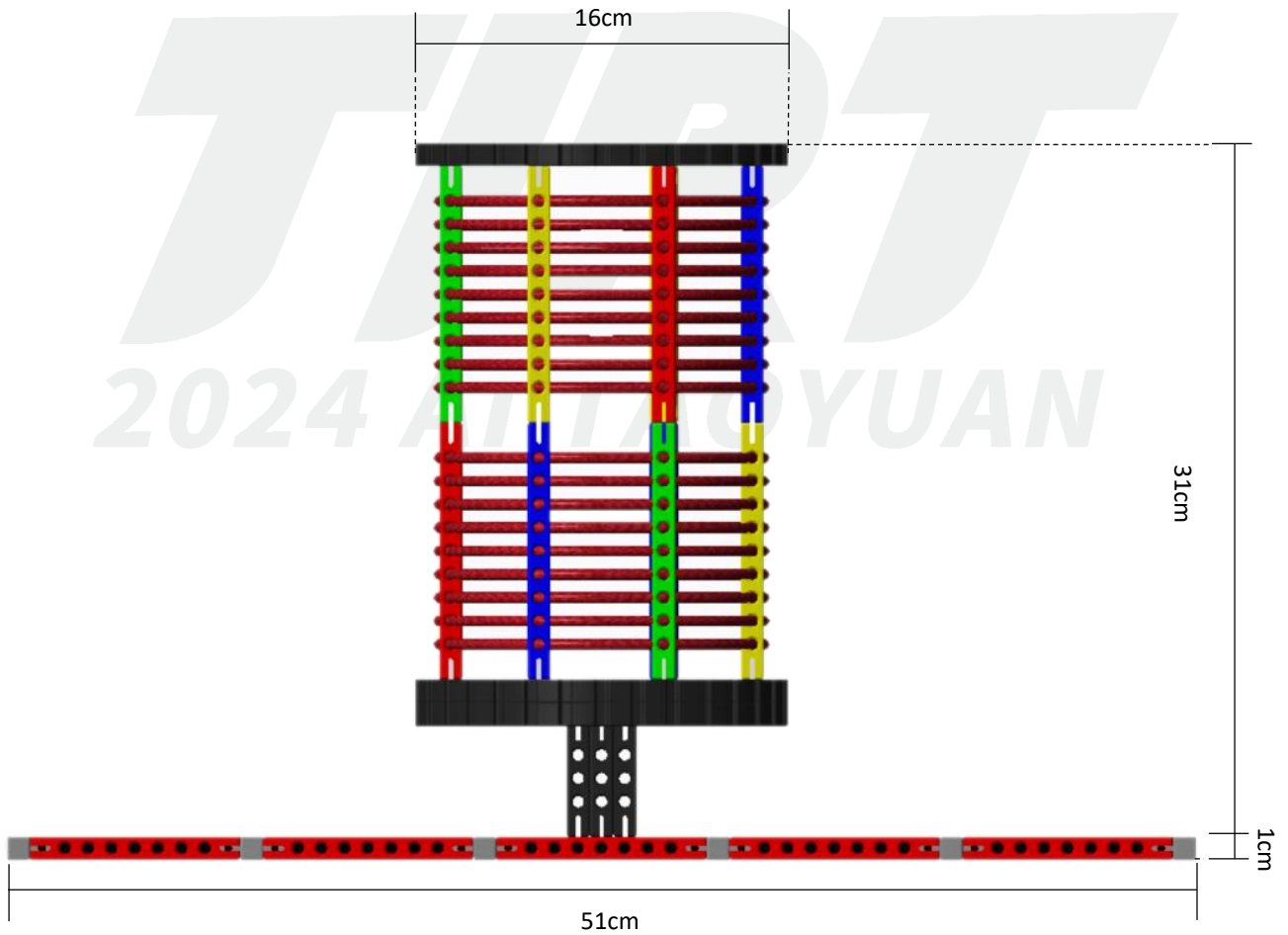
Unit: Centimeters :



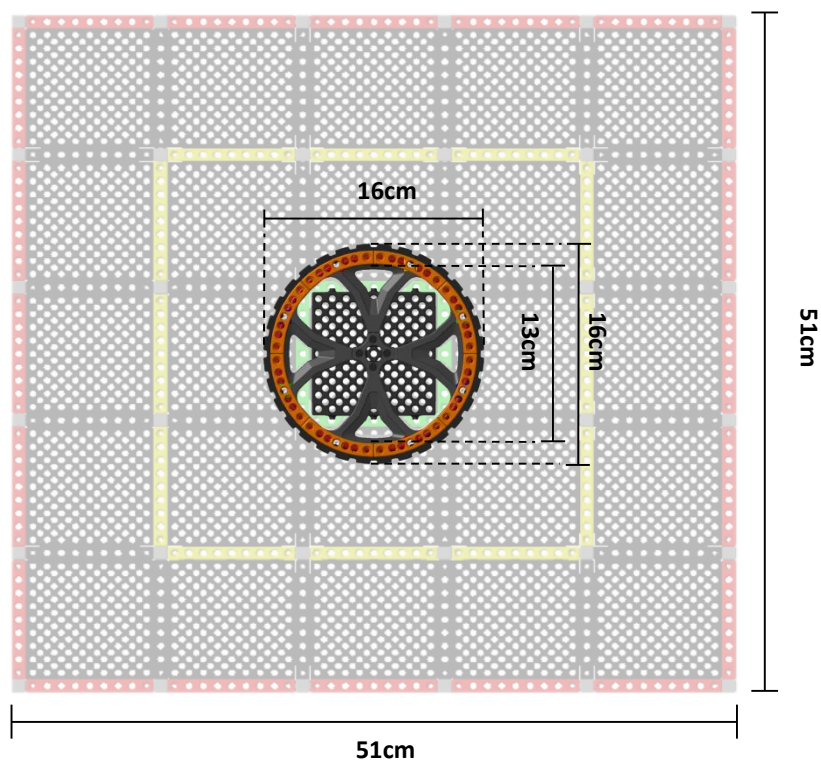
d. Ball Retrieval Point and Starting Zone Diagram :



E. Ball Holder Dimension Diagram: Side View

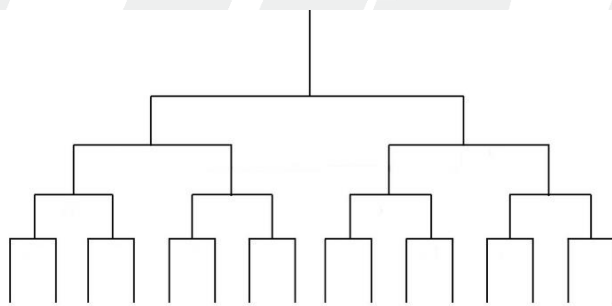


f. Ball Holder Dimension Diagram: Side View



E. Tournament Format Explanation :

The tournament format is a single elimination tournament, and the referee reserves the right to adjust the competition format according to the actual number of teams.



F. Reward Mechanism :

Ranking	Prize Money (NTD)	Certificate
 1 st Place	\$5,000	V
 2 nd Place	\$3,000	V
 3 rd Place	\$2,000	V
 Excellent Work	-	V