

Lightweight Sumo Robots

Competition Regulations

2023.06 version

A. Origins of the Project :

ShaYangYe is committed to deepening and promoting robotics education and industry integration, striving to make Taiwan an international stage for robotics competitions. Since 2018, for five consecutive editions, we have partnered with the Taoyuan City Government to organize the INTERNATIONAL ROBOTIC FESTIVAL IN TAOYUAN, the first of its kind to bring together four major robot competition fields: land, sea, air, and maker. Over the past five years, we have created a glorious record with over 10 million participants online and offline, 20 countries participating together, and a total of 8,200 teams from domestic and international locations. We aim to promote related industries through robot training and competition, expand the international perspective of Taiwanese participants, and create a cross-domain international event in robotics that shines in Taoyuan and the world! The 2023 INTERNATIONAL ROBOTIC FESTIVAL IN TAOYUAN, in order to promote the Taiwanese robot industry and self-made brand energy, plans a series of competitions—TIRT Sumo Car Robot Lightweight Division. This competition combines multiple programmable control formats to showcase Taiwan's technological strength in smart manufacturing and to connect with the TIRT International Tournament and Conference!

B. Objectives of the Project :

1. By participating in competition activities and engaging in collaborative learning, we aim to provide domestic and international teams with opportunities to observe programming, mechatronics integration, and knowledge sharing, thereby stimulating students' motivation for learning.
2. By incorporating diverse and open control systems and designing various competition objectives, we aim to enhance 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. Eligible Participants :

1. Students from elementary schools, junior high schools, senior high schools, vocational schools, and colleges/universities in all counties and cities nationwide (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 group are allowed to participate **(with proof of valid student status from their respective countries).**

G. Competition events :

Sumo Robot Lightweight Division

H. Competition grouping :

1. Primary School Division : Limited to elementary school students, with a maximum of 3 team members per team.
2. Junior High School Division : Limited to junior high school students, with a maximum of 3 team members per team.
3. Senior High School, Vocational School, and College Division : Limited to senior high school, vocational school, and college students (including master's and doctoral students), with a maximum of 3 team members per team.



I. Event description and schedule planning :

1. Registration Method : Visit the TIRT official website (<https://www.tirtpointsrace.com>) and click on 「 」 for registration.
2. Registration Period : From June 31, 112 (Year 112) to October 15, 111 (Year 111) (subject to adjustment based on team registration status).
3. Competition Date : October 29, 112 (Year 112).
4. Competition Venue : Taoyuan Dome (No. 1, Section 1, Sanmin Road, Taoyuan District, Taoyuan City).

J. Other matters :

The organizer reserves the right to modify the regulations and rules. For any matters not covered in the regulations, the latest announcements from the organizer on the official competition website shall prevail. If there are any concerns regarding this event, please contact the organizer at the following phone numbers: Mr. Qin at extension 5338 or Ms. Wang at extension 5310.

Lightweight Sumo Robots

Competition Rules

2023.0518版

A. Eligibility for Participation :

The eligibility for participation is divided into Elementary School Group, Junior High School Group, and High School/College Group. The High School/College Group is a cross-grade competition, and awards will be presented separately during the ceremony.

B. Competition Vehicle Regulations :

1. The Sumo Car must be constructed using plastic building blocks and may also include composite materials (limited to plastic material). Metal connectors can be used for the joints. For any special materials, please consult the organizers in advance. Otherwise, the determination of the organizers during the inspection will prevail.
2. The dimensions of the car body must not exceed 25cm in length, 25cm in width, and 25cm in height. The car body must not have any deformable or extendable mechanisms. For any special designs, please consult the organizers in advance. Otherwise, the determination of the organizers during the inspection will prevail.
3. Only the tires of the Sumo Car are allowed to touch the ground. All other structural components, including the chassis, must maintain a distance of at least 1.1cm from the ground (with a tolerance of $\pm 0.1\text{cm}$).



4. The total weight of the sumo car, including the battery, must be 2500 grams or below.
5. Each participating sumo car is only allowed to use one microcontroller (single-chip controller).
6. The rated voltage of the battery supply should be limited to DC 9V or below. The referees have the right to request participants to open the microcontroller for inspection. If the specifications are not met within the inspection period, the team will not be eligible to participate in the competition.
7. The participating sumo car must be fully autonomous. The use of wireless communication or remote/wired control systems to control the sumo car is not permitted. Failure to comply will result in disqualification of the team.

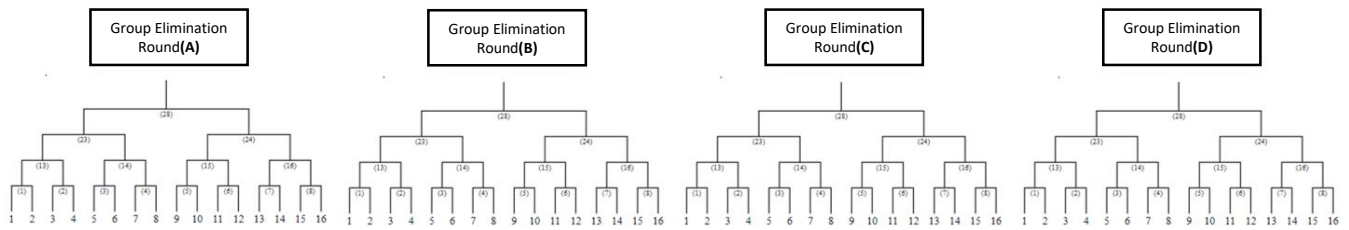
C. Competition Format :

The tournament format generally consists of preliminary rounds -> elimination rounds -> round-robin matches

D. Competition Format Description :

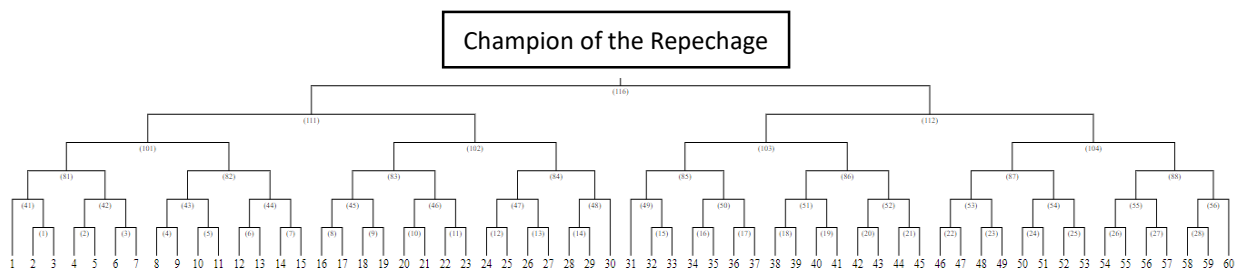
1. Preliminary round :

All teams are divided into several groups (based on the number of participants on-site) for group elimination matches. The champions of each group will be determined. **Each match consists of 3 rounds, following a best-of-3 format.**



2. Repechage :

The losers of the group stage will participate in the knockout round to determine the loser's champion. Each match will consist of a single round, with a one-win format.



The champions of each group in the preliminary rounds will participate in a draw for a round-robin tournament. The final rankings will be determined based on the number of wins. If there is a consolation tournament, the champion of the consolation round will also join. In case of a tie in the number of wins, the rankings will be decided based on the total number of rounds won. If the total number of rounds won is also tied, an additional match will be held to determine the ranking. **Each match consists of 5 rounds, and a best-of-five format will be used.**

team	Inclusion1	Inclusion2	Inclusion3	Inclusion4	Champion of the Repechage	Victory	Number of Laps	ranking
Inclusion1								
Inclusion2								
Inclusion3								
Inclusion4								
Champion of the Repechage								

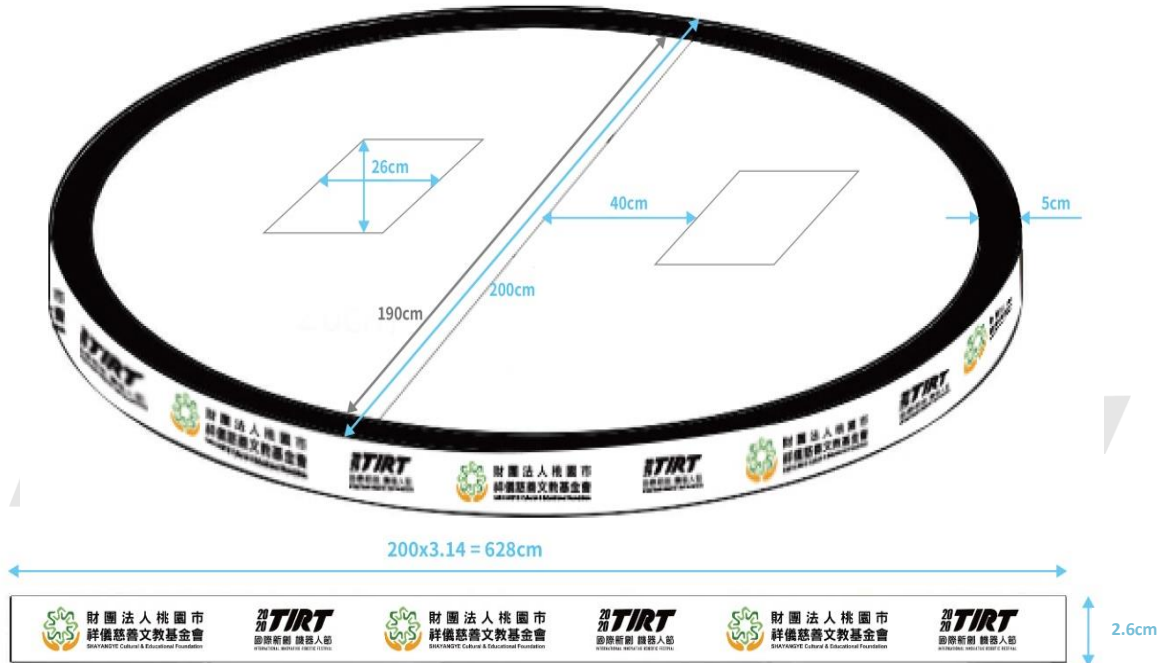
E. Competition Rules :

1. After the completion of on-site registration, all personnel except the participating athletes must leave the competition area. If they fail to comply even after being advised, the respective teams will be deemed disqualified from the competition.
2. Prior to the start of inspection, the referees inform the teams to place their sumo cars in the inspection area for scrutiny. Once the inspection is completed and passed, no modifications, dismantling, or alterations to the state of the sumo cars are allowed. The sumo cars must be placed in the designated position.
3. Each team can only use one sumo car. It is strictly forbidden to exchange sumo cars or parts between different teams. Any team found in violation of this rule will be disqualified.
4. In each competition, a maximum of one team member can enter the competition area. The preparation time for entering the field is 1 minute. Participating teams (limited to participating athletes) can adjust the sumo car and change batteries within 1 minute, but they are not allowed to download programs.
5. The starting position in each competition is determined by a rock-paper-scissors game, and the winning team chooses the side.
6. In each round, the sumo car is placed in the starting area according to the referee's instructions. There are no restrictions on the placement of the front of the car. After each round of competition, the teams must exchange the field.
7. When the referee announces the start, both players must quickly retreat to the referee-designated positions after starting their sumo cars to avoid interference in the competition due to human factors.
8. After both sumo cars are activated, they must touch their own black border line. If there is a violation, the round is considered a failure and the opponent wins.
9. If one of the teams fails to start within 5 seconds after the opponent's sumo car is activated, the round is considered a failure, and the opponent wins.
10. Each round is time-limited to 1 minute, and the referee will make a decision based on the situation at the moment the time limit ends.
11. If the sumo car touches the floor outside the competition area in any round, it is considered a failure, and the opponent wins.
12. If both sumo cars are in a deadlock situation during the competition, the referee has the right to make a deadlock judgment. The referee will count down for 5 seconds, and after that, the timer will be paused. The sumo cars will be retrieved and powered off. The remaining time of the round will be used to resume the competition.

13. When the time limit of each round expires, if both sumo cars are still on the field, the one with the lighter weight wins. If both sides have the same weight, a rematch will be held for that round.
14. After the start of each round of competition, if any part of the sumo car accidentally falls off, it will no longer be considered part of the sumo car. The referee has the right to remove the fallen object and hand it over to the participant.
15. After the start of each round of competition, no reassembly or replacement of parts or batteries for the sumo car is allowed, and no request to pause the competition is permitted.
16. If during a competition, a participant interferes with the game in any way, the competition is immediately stopped, and the opponent is declared the winner. If the interference is caused by someone other than the participant, a rematch of the round will be conducted.
17. After each round of competition, each team can request maintenance. As long as one team makes the request, both teams share the maintenance time. After the referee announces the start of maintenance, a 1-minute countdown begins. Only the participating athlete can perform maintenance, and teammates from the same team are not allowed to enter and assist with the maintenance.
18. After the inspection, both parties are allowed to rearrange the sumo cars or reassemble any fallen parts in their original positions. However, no additional or fewer parts are allowed, and downloading programs or changing batteries is also prohibited.
19. The referee will record the competition results, and teams are required to sign to acknowledge them. Any objections should be raised immediately, as no disputes will be entertained once the player leaves the venue or after the competition ends.
20. If there are any doubts or uncertainties, they should be raised to the referee 之前 the competition begins. The referee will handle and make judgments on such matters. Once the competition starts, no further objections will be accepted. In case of any disagreements, the decision of the referee panel will be considered final, and no objections will be allowed.
21. The organizers will provide the competition venue for teams to conduct pre-match testing. The testing time will be determined by the organizers and teams are required to queue up at the competition venue during the designated time. Participants must bring their own sumo cars and are not allowed to bring competition venue mats for practice.
22. The competition venue must not be damaged or stained. If the situation is severe, the team may lose their eligibility to compete. If the competition venue is damaged or stained during the competition, the match will be immediately stopped, and the opponent will be declared the winner.

F. Venue Description :

The race track is a circular field with a white background and black border lines. The overall diameter of the track is approximately 200cm, with the inner white circular area having a diameter of 190cm. The starting line is about 40cm away from the center line. The black border line has a width of around 5cm. The thickness of the track is approximately 6cm, and its surface is about 6cm above the ground. The center line and the line for placing the sumo car are thin lines visible to the naked eye but do not interfere with the sensors. The exact positions, dimensions, and weights of the race track and its accessories will be provided on the day of the competition. °





If there are any concerns during the competition, the decision of the referee shall prevail, and no objections shall be made.

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G. Reward Mechanism :

1. Elementary School Division
2. Junior High School Division
3. High School and College Division

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

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