

CLAWAR Robotics Competition & Exhibition

CLAWAR Robotics Competition & Exhibition is a competition challenging the research and development community, worldwide, to present their research results in the form of a technical presentation and a public demo. The scope of the demos encompasses physical robots (one or more), mobile or not, land, aquatic or aerial. The acceptance of teams/demos may be limited due to the availability of technical conditions at the site. Each demo will be evaluated by a jury of prominent individuals with a strong connection to robotics with respect to their: technical-scientific quality; application potential; capability to present the solution to the public; and quality and success of the demo. The top team will be declared the winner of the competition. The CLAWAR Robotics competition will be held during the CLAWAR 2019 Conference in Shah Alam, Selangor, Malaysia.

Category

CLAWAR Exhibition & Award

1. Primary School
2. Secondary School/Matriculation/ Vocational School (Aged 18 and below)
3. Open/University/College University/College/Vocational College (Aged 19 and above)

CLAWAR Robotics Competition

-Robosumo (open category)

Fee Structure

Category	Local		International (USD)	
	Early Bird	Normal	Early Bird	Normal
CLAWAR International Exhibition & Award				
Primary*	200	300	150	175
Secondary School/Matriculation/ Vocational School (Aged 18 and below)*	300	400	175	200
Open/University/College University/College/Vocational College (Aged 19 and above)*	500	600	200	225
CLAWAR International Robo Sumo Competition				
Robo Sumo*	150	250	100	150

*Each team consists of 3 members (inclusive teacher/instructor). Fees are inclusive of two days lunches and refreshments, award, certificate and competition pack.

Important Dates

CLAWAR Exhibition & Award

Proposal Submission for CLAWAR Exhibition [Final Extended Dateline]	15 March 15 April 2019
Notification of Proposal Acceptance	01 May 2019
Agreement Submission	01 June 2019
Early Bird Registration	01 June 2019
Normal Registration	15 June 2019
CLAWAR Robotics Competition & Exhibition	26 – 28 August 2019

CLAWAR International Robo Sumo Competition [**CLOSED**]

Team Registration	15 March 2019
Notification of Acceptance	01 May 2019
Early Bird Registration	01 June 2019
Normal Registration	15 June 2019
CLAWAR International Robo Sumo Competition	26 – 28 August 2019

CLAWAR Exhibitions & Awards

Rules

During the competition, each team has to:

1. Make a technical presentation (20 min), on the CLAWAR Robotics Competition Special Session, regarding the new developments and innovative aspects involved in the design their project.
2. Make a short non-technical presentation together with a public demo (30 min), being challenged by the public and/or the jury.

Evaluation

The evaluation made by the jury in the two stages must follow the following criteria:

	Criteria	Weight
1	Technical-scientific quality of the proposal, originality / creativity/ innovations and technical knowledge.	30
2	Design problem, specifications and idea challenges, application potential and scalability.	20
3	Capability to present the solution to the public and dissemination and exploitation of the project, practicality and complexity.	20
4	Quality and success of the demo.	20
5	Impact to society, evaluated based on the value of the project to the benefits for the society.	10
	Total	100

Each member of the jury assigns 1 – 5 points per criteria. The points assigned by each member are summed up, and the teams are ranked according to this sum. In the case of ties, the jury can vote on the ordering of the tied teams.

Before the competition

The Organizers of this competition are responsible to distribute a Call for Participation (CfP) aiming the international research and development community, detailing the competition goals and the requirements participating teams must meet, as well as the operational procedure teams must follow to apply.

After the deadline for the submission of participation applications, the Organizers perform a pre-selection of the teams exclusively based on the adequacy of the proposals with respect to the CfP. Then, the selected teams are informed. The participating teams must sign an agreement binding them to the participation in the competition.

Format for the proposal:-

- Font Arial, Saiz 10 – 11
- Number of page : 8 – 10 pages
- Content:-
 - o Introduction
 - o Problem Statement
 - o Solution/Design
 - o Impact to the society
 - o Conclusion

During the competition

The competition takes place during 2 days, according to the following schedule:

Day 1 – Setup

The first day is reserved for the hosting and setting up of the teams. During this day, the agreed resources are checked, and the teams can start working on their demos right away.

Day 2 – Technical Presentation to the Jury

Each team is asked to present a technical description paper of their robot in front of the jury by detailing the technical aspects of the demo. The presentations in this session will, exceptionally, last up to 20 minutes per team plus 10 minutes of questions and answers. The jury evaluates each team with respect to the technical scientific quality of their approach, and to the application potential of the solution.

The presentations and demos are then evaluated by the jury, whose elements vote individually each of the criteria in the Evaluation section (1 – 5).

Day 3 – Award Presentation

CLAWAR International Robot Sumo Competition

INTRODUCTION TO THE GAME

Sumo is a traditional sport competition in Japan. It is like a wrestling game in which one must push its opponents out of the game field or ring. In this competition, instead of people, robot will be used. These robots will push each other out of the designed game field. This is an autonomous sumo robot competition. Therefore, the robot is not controlled by any human operator. The robot must have the intelligent to find its opponent and push its opponent out. Other than that, the opponent robot must have the ability to stay inside the ring especially when it detect that it is at the edge of the ring.

OBJECTIVE

Participants are required to build an autonomous, self-contained mobile robot that is able to push its opponent out of the specified ring according to the tournament rules. Robot handlers are to start the robot wireless via remote control with the press of a single button.

TEAMS

Each team consists of three members.
Only 2 students are allowed to enter the game field during a match.

ROBOT SPECIFICATIONS

Dimensions and Weight

The size of the robots shall not exceed **200mm (length) x 200mm (width)**. There is no height restriction and it may take any shape and size once the match begins.
The weight of the robot shall not exceed **3 kg**.

Restrictions on robot Design

The robot must not have a device that interferes with the sensor operation of its opponent
e.g. Jammer, strobe light, laser & etc.

Robots shall not damage the arena deliberately.

Robots shall not throw liquid or powder or other substances at the opponent.

Robots shall not employ any flammable devices as a weapon.

Robots should not secure itself on the ring surface by using, suction cups, diaphragms, sticky treads, glue or other such devices.

Projectile weapons or saw-blades are prohibited.

Sticky substances to improve traction are not allowed. Tires and other components of the robot in contact with the ring must not be able to pick up and hold a standard A4 paper (80 g/m²) for more than two seconds.

Robot Control

The robot shall be autonomous. No external form of control or any external intervention is allowed. The Robot is to be started with a single button or wireless remote switch.

Labelling

All robots must be labelled with their team names on the front of the robot. The minimum font size is Arial 24.

Clearing of Debris

Fallen items from the robots shall be removed after each match.

RING SPECIFICATIONS (REFER APPENDIX 1)

Dimensions and Materials

The ring arena is made of a 15mm thick plywood. The diameter of the ring is **1500mm** including the boundary marking.

Markings

Two black colour starting lines (200mm x 25mm) locate at 200mm apart at the centre. They indicate the starting positions for two competing robots.

The boundary of the ring arena is marked in white colour. The width is 50mm.

Ring Condition

The ring condition may vary slightly and participants should design and build their robots with robustness in mind.

GAMES RULES

Sumo Game

The tournament shall divide the participating teams into groups. A game consists of 3 matches. Each match shall last for 2 minutes. Three points shall be given to every match winner. One point will be given to draw and Zero point shall be given to a loser. If a game ends with no winner, draw will be given to the both team.

Starting Point

Each robot must be place behind the starting line (dark line).

Robot is immediately started after a start button is pressed.

Robot position is as described:

- In the 1st match, robot must face each other.
- 2nd match the robot must start side by side opposite to each other.
- 3rd match the robot start back to back opposite to each other. Refer to APPENDIX 2 for more details.

Scoring

A robot winner shall be given when:

- A team legally forces the body of the opposing robot to touch the space outside the ring, which includes the side of the ring its self.
- The opposing robot has touched the space outside the ring on its own.
- Either of the above takes place at the same time that the end of the Match is announced.

The match shall be stopped and a rematch started under the following conditions:

- The robots are entangled or orbiting each other with no perceivable progress for 5 seconds. If it is unclear whether progress is being made or not, the judge can extend the time limit for observable progress for up to 30 seconds.
- Both robots move, without making progress, or stop (at the exact same time) and stay stopped for 5 seconds without touching each other. However, if one robot stops its movement first, after 5 seconds it will be declared as not having the will to fight. In this case the opponent shall receive a Winner, even if the opponent also stops. If both robots are moving and it isn't clear if progress is being made or not, the judge can extend the time limit up to 30 seconds.
- If both robots touch the outside of the ring at about the same time, and it cannot be determined which touched first, a rematch is called.

Three point shall be given to every match winner. One point will be given to draw and Zero point shall be given to a loser

If a game ends with no winner, draw will be given to the both team.

Winner will be decided by the number of point obtained.

Group winner will be decided as follow:

- **Most number of win**
- **Highest point**
- **In the case of withdrawal of a team, the opponent will be given a win with a 3 point score.**

Service Time

Participants will be given 1 minute of Servicing-Time before the start of their game. A maximum of two members are allowed to service their robots at a designated area under supervision. Only replacement of identical parts and batteries are allowed during the Servicing-Time.

Time Out

Each team will only be given one time-out of one minute in a game (of 3 matches). The time-out will apply after the match and only for the requesting team. Changing of battery is not allowed during the time-out.

Robot Handler

A participant is allowed to handle only one same robot throughout the event. Each robot should only have one same handler. The handler and robot will be identified during registration and caging.

Handler must wear proper attire (shoes etc.) with personal protective equipment (if needed).

INSPECTION

Robots shall be inspected before the start of the game.

DISMISSAL DAN CANCELLATION

7.1. Dismissal

A judge can stop a match if:

- Teams damage the game field or any competition props.
- No spirit of fair play (fair play) and friendship among the participants
- Participants disobey instruction from the judges.

CANCELLATION

The judges can cancel a match / participation of a team if:

A robot does not comply with the competition specification.

Robots have provocative writing or images.

A participant wears provocative clothing.

Participants show or say a provocative gesture or signal or words.

OTHERS

Only one robot is allowed to be used for each team. (No sharing of robots is allowed).

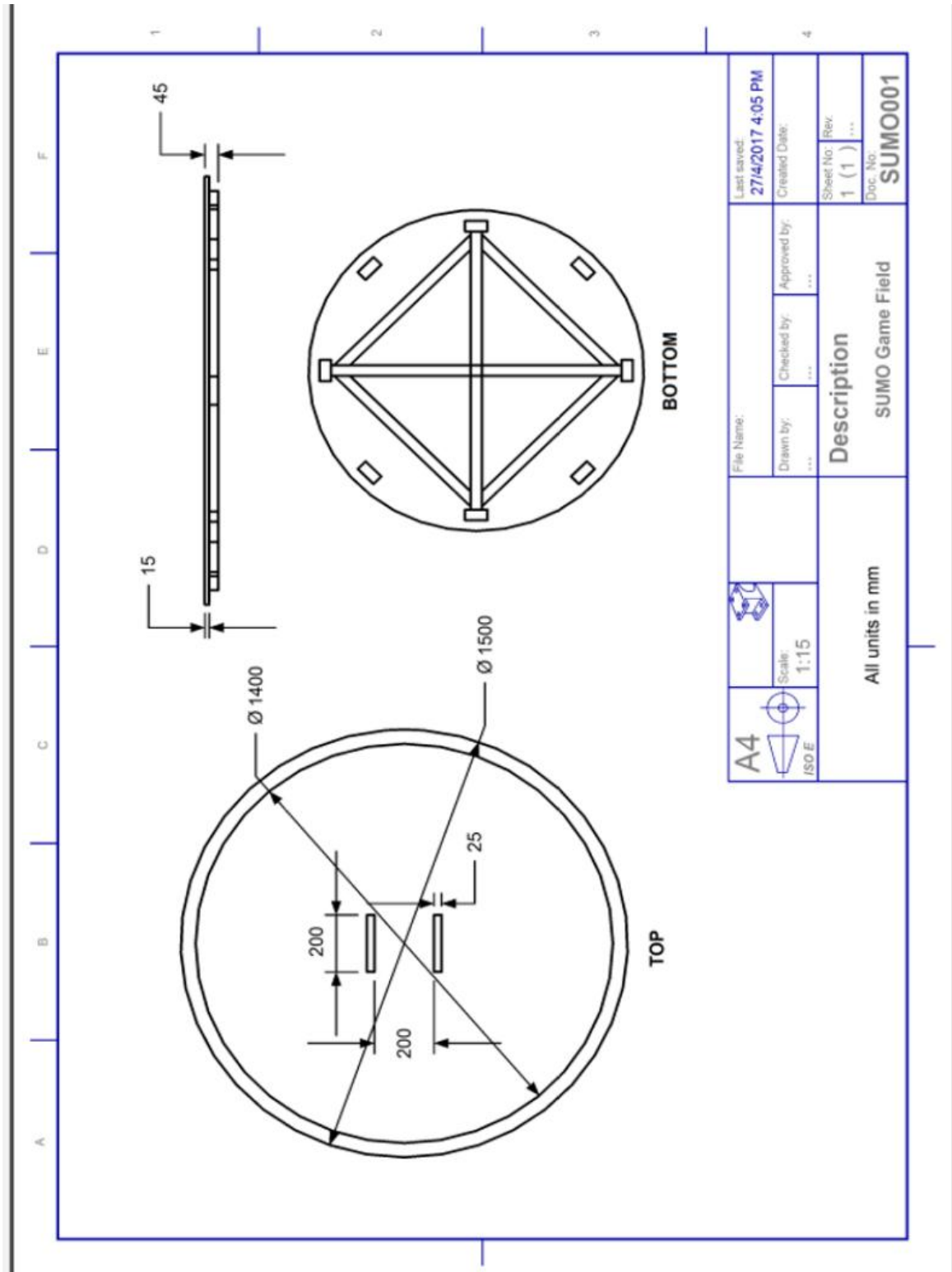
The robot must be developed and built by the participating teams themselves.

All participants must follow instructions given by the judges.

Any rules that are not pointed out in this rule book will be determined by the judges' discretion.

The judges have the final say in all matters pertaining the competition and it will be deliberated and discussed among the judges before a decision is made.

APENDIX 1: Game field drawing

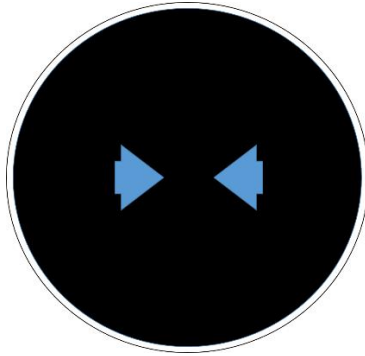


Game Example

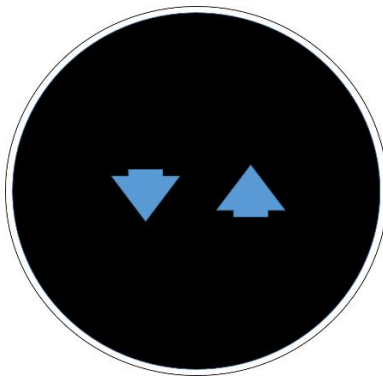


APENDIX 2: Starting Position

First Match



Second Match



Third Match

