



Yantra X – Autonomous Akhada

Theme: Sumo Synergy Battle Beyond Strength

In the ever evolving world of robotics, the battleground is no longer ruled by brute force alone. Yantra X Autonomous Akhada invites you to the Sumo Synergy, where intelligence, precision, and coordination define the new champions.

This is not just a contest of power, it's a test of partnership. In this cutting edge 2v2 autonomous robot showdown, teams must engineer machines that can think, react, and collaborate without a single human command once the battle begins. Communication, cooperation, and clever tactics are the weapons of choice in this circular arena.

Here, strategy outweighs size, timing beats speed, and synchronized action reigns supreme. Your robot is not a lone warrior, it is part of a dynamic duo, fighting side by side to outmaneuver, outpush, and outsmart its rivals.

Concept:

In this futuristic arena, raw strength is no longer enough. Victory lies in the hands of teams who can think, move, and act as one. Robots must not only push their enemies out of the ring, but also communicate, strategize, and cooperate like true combat partners. Welcome to Sumo Synergy, where dual coordination and tactical alliances shape the champions of tomorrow.

Task:

Design and construct a fully **autonomous robot** capable of engaging in a 2Vs2 Sumo tournament without human intervention once the match begins.

General Rules:

- Each participating team may consist of up to 4 members.
- If the students from different Institutes/Universities want to join hands and form a team in collaboration, they can do so.
- Disqualification will be made on the spot, if any of the team members are found arguing (using slang/physical contact/Inappropriate behavior) with the organizing team or the member of another team.
- The organizing team has the right to amend the competition rules/duration at any time according to the need.
- The panel of judges for each competition will be composed of members from the relevant fields and past experiences in competitions.
- The decision of judges will be final.
- No part of a prize is exchangeable for cash or any other prize.





- Incorrectly completed entries during registration will be disqualified.

Game Rules (2 vs 2 Format with Team Communication):

- The objective of the game is for a team to eliminate both opponent robots by pushing them out of the arena.
- Each match consists of two teams with two robots each. Robots must identify and coordinate with their teammate autonomously using onboard sensors or communication systems.
- Team robots must demonstrate cooperative behavior, such as strategic positioning, target-sharing, or avoiding interference with each other.
- Each round lasts a maximum of 2 minutes unless one team eliminates both opponent robots earlier.
- The match begins when the start signal is given; timing starts at that point.
- Once the robots begin moving, no human intervention is allowed.
- A robot is considered "out" if it exits the arena by itself or by being pushed.
- A team wins if both of the opposing robots are pushed out of the arena.
- If the time expires and both teams still have robots remaining:
 - The team with more robots inside the arena wins.
 - If equal, the team with the robot(s) closer to the center wins.
- If a robot is immobilized for 20 seconds due to a technical fault, the team may request a timeout.
- Each team is allowed one 1-minute timeout per match. Timeout time does not count toward match duration.
- After one timeout, any further immobilization will be considered a knockout for that robot.
- Robots are not allowed to use destructive mechanisms, flip, or entangle opponents. Violations will result in immediate disqualification.
- Robots are allowed no weapons, and are not allowed to flip each other.

Robot Specifications:

a) Dimensions and Weight:

- The maximum size of the robot should be 25*25*25CM. It should fit in 25*25*25 (from inside) wooden box.
- The maximum weight of the robot should be 3kg.
- All components mounted on the robot will be counted as part of the robot's total dimensions.
- All robots will have to pass prior inspection before entering the competition.
- Any robot exceeding these limits will be immediately disqualified.
- Further it is the responsibility of the team to ensure that their robot meets the weight requirements and that any modifications made during the competition do not cause the robot to exceed the weight limit. The weighing of the robots will be



done before the start of the competition, and the weight limit will be strictly enforced.

- It is important to note that the weight of the robot will be determined before the start of the match, and any modifications made during the competition that cause the robot to exceed the weight limit will result in disqualification.

b) Electronics:

- The robot must be fully automatic.
- All types of sensor are allowed.
- Any type of microcontroller is allowed.
- There is no limit on the number and types of motors used in the robot.
- Any kind of motor driver IC or module can be used.
- Power sources that are considered dangerous or unsuitable by the judges will not be permitted.
- The voltage of the robot electrical power source must not exceed 24-volt DC.

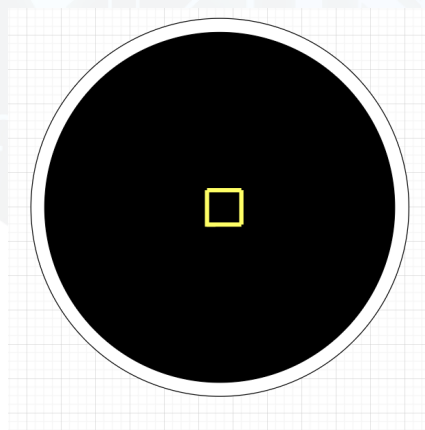
Dohyo: The Arena Specifications

The Dohyo for this competition is constructed of wood with a black paint surface, a white paint boundary line and has the following dimensions:

- Diameter- 5ft
- Height- 30cm
- Border Width- 1 inch

Start Zones:

Four designated starting zones at 90° intervals. Each robot starts on one side of a square inscribed within the circle. Opposing robots start diagonally opposite each other.





Registration Details:

For Registration , please go through the link: <https://forms.gle/Z2MzoL6xeqRkp9EW6>

Registration Fee:

Normal Registration– NPR. 8,000 (August, 2026 to September, 2026)

Late Bird Registration – NPR. 10,000 (October, 2026 to November, 2026)

Contact Details:

For any questions, feel free to contact us at :

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