

Radiance 2018
RoboSumo Competition
Problem Statement

1. Task

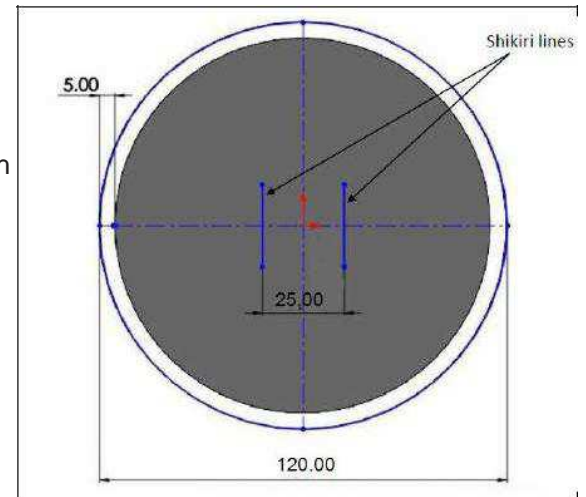
- Design a robot whose task is to push the opposing robot out of the circular arena. It can push, drag, or otherwise move the opponent out of arena in given time. The robots would compete one-on one against each other in a knock out tournament.

2. Robot Specifications:

- The robot must fit within a square box of following dimensions initially:
Width: 30cm, Length: 30cm, Height: No constraint.
- The robot may expand in size once match begins, but not physically separate into pieces, and must remain a single centralized robot.
- The total mass of the robot must not exceed **5kgs** (2% error is negotiable).
- Robots can be autonomous or remote controlled. Wired or wireless remotes can be used.
- Teams using wireless robots should use **multi frequency** remotes to avoid frequency interference.
- Irrespective of the mechanism used, only one member would be allowed to control the bot during the match.
- The robot should be electrically powered. The power supply must be on-board. Potential difference between any two points must not exceed **15 volts**.
- Any control mechanisms can be employed, as long as all components are contained within the robot.
- In case of wired bots, the wires should remain slack during the fight.
- The wires should remain insulated and all the wires coming out of the machine should be stacked as a single unit.
- Parts that could break or damage the ring are not allowed. Do not use parts that are intended to damage the opponent's robot or its operator. Normal pushes, lifting or collisions are not considered intent to damage.
- Use of pneumatics, hydraulics, inflammable liquids, flame weapons, glue, RF jammers, and electromagnets systems is strictly prohibited.

3. Arena Specifications:

- The arena ring will be circular in shape with diameter of **120cm** including the line
- "Shikiri" lines (starting lines) consist of two parallel lines centered in the ring with appropriate width and distance of **25 cm** between them.
- The border line will be marked as a white circular ring of width **5 cm** on the outer edge of the playing surface. The ring area extends to the outer edge of this circular line. A robot shall be considered as winner if it is able to push its opponent out across this line (out of the ring).
- For all given arena dimensions a tolerance of 5% applies



4. Gameplay Rules

- The teams will compete in one-on-one basis in a knockout format with the winning team qualifying for the next round.
- Each match will consist of **3 rounds**, with a time limit of **2 minutes** for each round, unless extended by the organizers.
- A round ends when -
 - i. A bot is pushed completely out of the arena
 - ii. A bot falls out of the arena by itself
 - iii. A bot is immobilized for more than **30 seconds**
 - iv. The prescribed time limit is reached
- The team which wins more number of rounds shall win the match.
- If a match is not won by either team within the time limit, an extended round will be fought, during which the team who wins the round shall be declared the winner.
- Alternatively, if no team wins after two such rematches, then the winner/loser of the match will be decided by the organizers.
- A round shall be stopped and restarted if both robots remain stationary or entangled with each other without any perceivable progress for 10 seconds.
- A time out of 2 minute will be given in between each of the 3 rounds. Teams must prepare their robots for next round within this time interval. Teams unable to adhere to this time limit would lose the round.
- At the beginning of each round, the two robots will be placed on "Shikiri" lines. The robots should be positioned such that the straight line joining them passes through the center point of the arena.

5. Judging

- The competition will be based on **single elimination playoff** i.e. whoever wins the match will advance to the next round and this method of elimination will continue up to the final round.

6. General rules and instructions

- The teams must adhere to the spirit of healthy competition. The teams should not damage the arena in any way.
- Decision of organizers shall be treated as final and binding on all.
- Organizers reserve the right to impose punishments and disqualify any team which indulges in misbehavior or violating any rules.
- Any team which is not ready at the time specified will be disqualified from the competition automatically.
- Human interference in the arena (e.g. touching the bot) is not allowed during the game.
- The robot would be checked for its safety before the race and would be discarded if found unsafe for other participants and spectators.
- Participating teams are always responsible for the safety of their robots and are liable for any accidents caused by their team members or their robots.
- The organizing team members will not be responsible or liable for any incidents and/or accidents caused by participating teams or their equipment.
- As long as the fundamentals of the rules are observed, these rules shall be flexible enough to encompass the changes in the number of players and of the contents of matches.
- The organizers reserve the rights to change any or all of the above rules as they deem fit. Change in rules, if any will be highlighted on the website and notified to the registered teams via email.

7. Eligibility

- All students with a valid identity card of their respective educational institutes are eligible to participate.
- Maximum of **4 members per team**. Participants from different branches/ college can team up together.

8. Certificate Policy

- Certificate of excellence would be awarded to **top 3 teams**.
- Certificate of participation would be awarded to all the teams participating in the competition.
- All the members of the team must be present whole time during the event to be eligible for certificate.

For further queries, contact

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