ROBO WAR

TASK

Design and construct a remote-controlled robot capable of fighting a tournament against another robot(s).

DESIGN SPECIFICATIONS

Specifications:

- There will be no restrictions on the dimensions of the bot(s).
- The weight of the machine should not exceed 6 Kgs, which includes the weight of all components onboard.
- The weight of the remote controller will not be counted.
- A bot can be in a "Cluster Bot" formation. Each bot must meet the requirements described in this problem statement. The total weight of all the bots and the dimensions of the combination of bots must satisfy the above two points.
- Objects in question to human damage should not be used on the robot.

Mobility:

- All robots must have easily visible and controlled mobility in order to compete.
- Methods of mobility include:
    - Rolling (wheels, tracks or the whole robot).
    - Non-wheeled: non-wheeled robots have no rolling elements in contact with the floor and no continuous rolling or cam-operated motion in contact with the floor, either directly or via a linkage, but are not true walkers as defined below.
    - Manually operated jumping and hopping are allowed. However, the maximum height of any part of the machine should not exceed 45 cm during any stage of competition.
    - Any damage caused due to the jumping mechanism is solely the responsibility of the team.

- The robots should not secure themselves on the surface by any means.

Robot Control Requirements:

- The robot must be controlled only through a wireless remote, while all power supply must be onboard.
- Autonomous functions within the bot are acceptable; the controller must be able to remotely disable or override these functions at any time.
- Cases of any interference in the wireless systems will not be considered for rematch or results.
- Remote control systems from toys may be used. Remote control systems available in the market may also be used.
- Nonstandard or self-made remote-control systems can be used only after approval from the organizers.
- The team should pair up the wireless remote with the machine before putting it into the arena.

Battery and Power:

- The machine must be powered electrically.
- Participants will have to bring their own converters for standard power supply according to Indian standards.
- Participants must protect the battery terminals from a direct short and causing a battery fire. Failure to do so will cause direct disqualification.
- Special care should be taken to protect the onboard batteries.
- Only bots with onboard batteries will be allowed.
- The supply from the battery to all the weapons and power systems should qualify the following fail-safes:
    - A manual disconnect (switch) that can be turned off without harming the person doing it, i.e., no body parts or weapons should come in the way of the switch.
    - Manual emergency stop that can be triggered through the radio controller.
- The teams are suggested to have at least one extra battery ready and charged up during the competition so that on advancing to the next level, they won't have to wait or suffer due to an uncharged battery.
- If teams do not show up during their allotted slot, they will be disqualified.

Weapon Systems:

- Robots can have any kind of magnetic weapons, cutters, flippers, saws, lifting devices, spinning hammers, etc.
- Following weapons cannot be used:
    - Liquid projectiles.
    - Any kinds of inflammable liquids.
    - Weapons causing invisible damage.
    - Weapons causing opponents' weapons (spinners) to entangle in them (chains, ropes or loose fabrics).
- All weapons must come to a full stop within 60 seconds of the power being removed using a self-contained braking system.

COMPETITION RULES AND SPECIFICATIONS

Team Specifications:

- Any team can participate in the Robowars, **Cliffesto'25**.
- A team may consist of a minimum of 3 and a maximum of 5 participants. These participants can be from the same or different institutes.
- **Team Captain**: Each team must specify their team captain at the time of registration on the website. All the important communications between **Cliffesto'25** organizers and the registered teams will be done through their team captain.
- The team must submit valid contact details at the time of registration.

Registration:

- Start preparing your bots for the competition. A mail will be sent when the registration portal goes live.
- **Cliffesto'25** organizers will make sure that the registrants are informed about any updates through email/SMS.

MATCH DURATION AND TYPE

Match Duration:

- Matches will consist of 3 minutes of active fight time exclusive of any time-outs. Hence, it is not binding but advisable to keep battery capacity, power usage, and machine defenses such that they can sustain a 3-minute fight.

Match Types:

The matches can be of the following types:

1. A regular 1-on-1 combat between 2 robots.
2. Resurrection Match: A combat involving robots, each of which has previously lost at least one match.
3. A combat between more than 2 robots simultaneously.

- A detailed document of rules regarding the format and rules to be followed during the event days shall be uploaded later, and the participants will be informed.

MATCH FREQUENCY

- A team is allowed to prepare for the next match for a period of 20 minutes.
    - This time is calculated from the time the robot leaves the post-match staging area of its previous match.
- In extreme cases, the 20-minute time period may be lengthened at the discretion of the event organizers.

CRITERIA FOR VICTORY

- A robot is declared victorious if its opponent is immobilized.
- A robot will be declared immobile if it cannot display the linear motion of at least one inch in a time period of 10 seconds. A bot with one side of its drivetrain disabled will not be counted out if it can demonstrate some degree of controlled movement.
- In case both the robots remain mobile after the end of the round, the winner will be decided subjectively.

- A robot that is deemed unsafe by the judges after the match has begun will be disqualified and therefore declared the loser. The match will be immediately halted, and the opponent will be awarded a win.
- Robots cannot win by pinning or lifting their opponents. Organizers will allow pinning or lifting for a maximum of 20 seconds per pin/lift, after which the attacker and the robot will be instructed to release the opponent.
- If two or more robots become entangled or a crushing or gripping weapon is employed and becomes trapped within another robot, then the competitors should make the timekeeper aware. The fight should be stopped, and the robots separated by the safest means.
- If a bot gets stuck inside the arena due to the deformity of the arena itself, the timer will be stopped, and the bot will be released by the safest means.

SCORING

Points will be awarded on the basis of:

1. **Aggression**: Frequency, severity, boldness, and effectiveness of attacks deliberately initiated by the robot against its opponent.
2. **Control**: Ability to attack an opponent at its weakest point, using weapons effectively, and minimizing damage caused by the opponent.
3. **Damage**: Deliberate action to reduce the functionality, effectiveness, or defensibility of an opponent. Damage caused inadvertently to itself will not be counted.

SAFETY RULES

- Compliance with all event rules is mandatory.
- Special care should be taken to protect the onboard batteries and pneumatics. Robots without proper protection will not be allowed to compete.
- All weapons must have a safety cover on any sharp edges.
- All participants build and operate robots at their own risk. Combat robotics is inherently dangerous.
- Once the robots have entered the arena, no team member can enter the arena at any point. If a fight has to be halted for any changes, organizers will manage it.

ARENA SPECIFICATIONS

- The out-to-out dimension of the arena will be 12ft x 12ft x 8ft (l x b x h).
- ***NOTE* :** These figures/parameters are subject to change. The maximum pressure limit may be upgraded depending on the equipment available. The arena size is also subject to the infrastructure. Polycarbonate thickness may be increased. They will be conveyed through updates to this document, as per the "Important Note" below.
- Proper protection and safety measures will be taken to prevent any accidents.

PRIZES

- The prize money will be awarded to winners via NEFT and processed within 25 working days after receiving sponsorship funds.
- Prize money may vary based on the number of participants.
- Winners must mail the following information to **cliffesto@nituk.ac.in**:
    - **Subject**: Competition Name, Team ID - Position
    - **Body of Mail**:
        - Captain Account Holder's Name
        - Account Number
        - Bank Name and Branch Name
        - IFSC Code

AN IMPORTANT NOTE:

- A robot winning in a round against its opponent doesn't guarantee its entrance into the next round. If the judges found the winning robot incompetent to enter into the next round, it may get disqualified.
- Judges can disqualify both the robots of a match from advancing to the next round. All the decisions taken by the judge will be final and binding to all. Any queries afterward will not be entertained.
- These rules may change at any time, even without explicit notification to teams.

- However, the document uploaded here is to be followed as the latest problem statement for all the rules and design specifications. The teams acknowledge that they have a responsibility to read, understand, and abide by the rules.
- Prize pool is subjected to the number of participants and on the discretion of the organising committee.
- **Cliffesto'25** reserves the right to prevent any team from competing at any time for any reason.
- In case of any queries, participants are encouraged to contact **Cliffesto'25** Team.
- **Cliffesto'25** has the rights over the guidelines and can alter them as per the requirements.

Contact Details of Event Head:

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