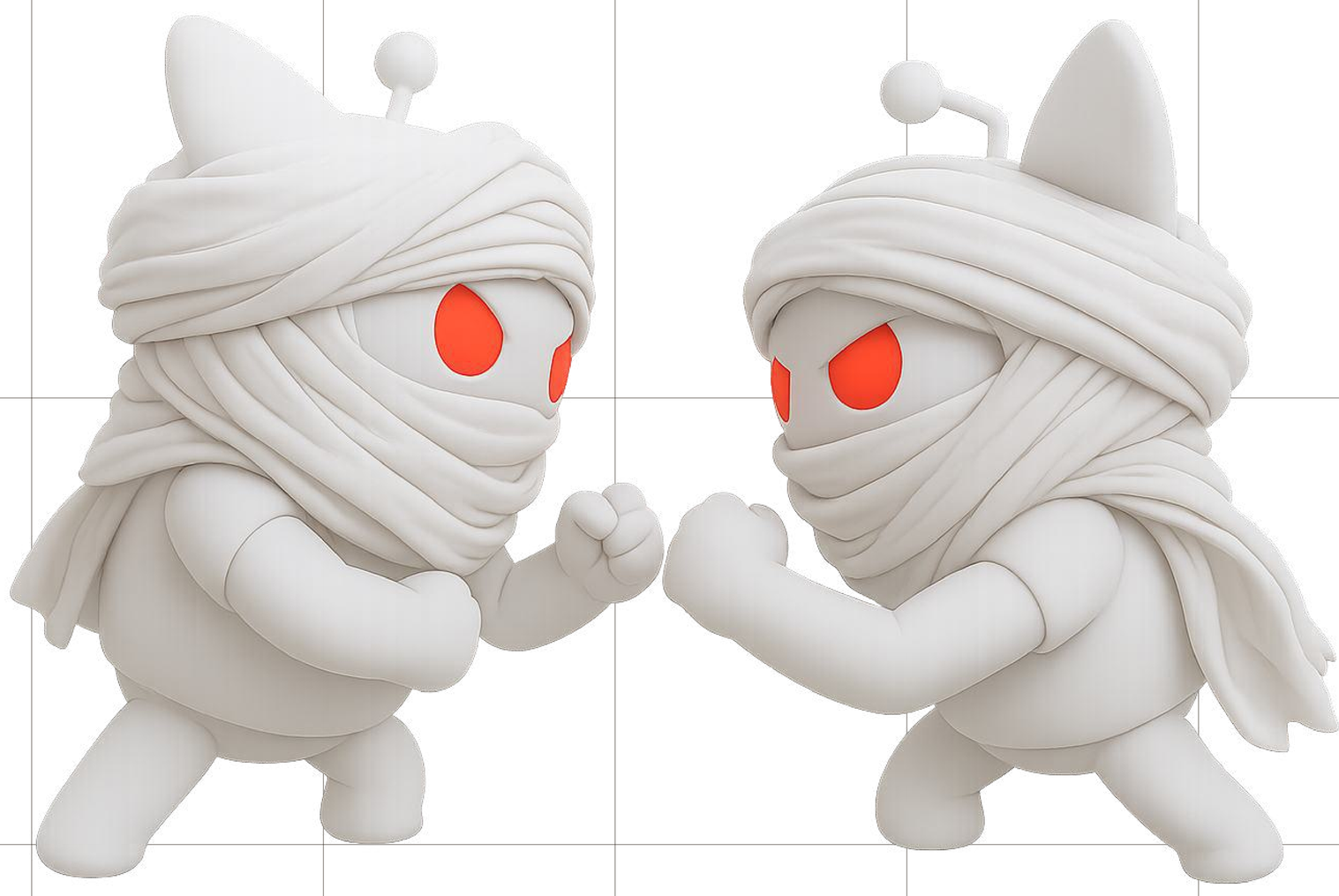
Afrobot

# ROBOT FIGHT

## Official competition guide



Date: **05 JULY 2025**

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# Summary

# 1. General Introduction

Welcome to the first edition of the Afrobot Festival, a unique scientific and cultural event set to take place in Algeria. This pan-African competition brings together robotics enthusiasts from across the continent in a space that celebrates innovation, strategy, and unity.
The festival includes:

- 5 robotics competitions
- Hands-on workshops
- Guest talks from leading innovators
- A dedicated exhibition zone for groundbreaking tech projects

Whether you're here to compete, learn, or connect, Afrobot offers an inclusive platform to showcase the future of African tech.

## Afrobot 2025

### “Inspired by Algeria’s Revolutionary Spirit"

Afrobot is more than a robotics festival — it’s a tribute to the roots of innovation and unity. Inspired by the Algerian Revolution, which began in 1956, we honor the six historic Wilayas that played a vital role in organizing the fight for independence.

Just as each Wilaya—Aurès, Constantinois, Kabylie, Algiers, and Oran —stood for courage, strategy, and resilience, Afrobot brings those values to life through technology and youth empowerment.

With 5 competitions, workshops, and innovation showcases, Afrobot 2025 celebrates both our revolutionary past and our vision for a united, tech-driven future across Africa...2/2

## Afrobot 2025 :

## Inspired by Algeria’s Revolutionary Spirit"

In the spirit of Wilaya IV – Algiers, known for its urban resistance, tactical precision, and leadership in national coordination, the Robot Fight competition challenges participants to think like revolutionary strategists.

Just as Wilaya IV led operations with sharp planning and bold execution in dense and complex environments, robot contenders must combine smart design, agility, and combat strategy to dominate the arena. This battle of bots pays tribute to the unwavering resilience and tactical brilliance of the Algiers Wilaya — where every move counts, and every strike tells a story.

# 2. Robot Specifications

## Weight Limits (No Tolerance Allowed)

- Wheeled Robots: Max 15 kg
- Shufflers: Max 20 kg
- Walkers: Max 27 kg

## Maximum Dimensions (+ 5% Tolerance)

- Length, Width, Height: 50 cm (accepted range: 47.5 cm to 52.5 cm)

The robots must respect these dimensions in their initial state (without taking into account possible extensions or movements of weapons).

## Robot Classifications

- Wheeled Robots:
- Ground-contact parts rotate continuously (e.g., wheels, tracks, belt drives)

### Not Allowed:

- Propulsion-only bots (fans, jets, maglev)
- Flying or floating bots
- Internal combustion engines
- High-pressure pneumatic systems
- Hovercrafts follow wheeled limits
- Jumping bots may qualify as walkers

## Mobility & Control

- Minimum Speed: 4.88 m/min (16 ft/min)
- Control: Radio only legal frequencies (2.4GHz/5.8GHz recommended)
- Tethered control not allowed
- The communication systems must be secured to avoid interference with other robots.
- Mandatory failsafe system that halts movement if the controller signal is lost

## Power & Safety

- Power: Sealed batteries (e.g., LiPo, NiMH, Gel Cells)
- **Not allowed** to use High pressure pneumatic systems
- Internal combustion engines are **banned**.
- Robots must have a clearly accessible kill switch or removable link to cut off power.
- Robots must pass a pre-competition safety inspection

1. Covers on sharp weapons
2. Stable on stands
3. Safe internal wiring

## Banned weapons include

- Liquid projectiles
- Any kind of flammable liquid.
- Flame-based weapons.
- Any kind of explosive or intentionally ignited solid.
- Nets, tape, glue, or any other entanglement device.
- Radio jamming, tazers, tesla coils, or any other high
- voltage device. - Un-tethered projectiles.

## Structure & Protection

- Reinforced structures and shock absorption are strongly recommended
- Robots must endure impacts without endangering others
- All dangerous edges must be safely covered when idle

# 3. Homologation & Inspection

## Registration & Homologation

- Only the team leader (with one assistant) can register and present the robot on event day
- Only one robot per team, no changes post-homologation

## Homologation Criteria

- Robots must be designed, assembled, and programmed by the team
- The use of pre-designed kits is permitted for standard components (motors, batteries, microcontrollers, etc.), but the structure, weapons, and armor must be custom-made or assembled by the team.
- Plagiarism or direct reproduction of existing robot designs is strictly prohibited

## Safety Requirements

- Clearly accessible emergency stop button
- Must instantly disable the robot
- Auto shutdown on signal loss

## Verification & Validation

- Technical inspection before tournament start
- Each robot reviewed before its first fight
- Judges may request minor fixes (e.g., loose parts, repositioning)

### Immediate Disqualification if:

- Exceeding weight or dimensions
- No functional kill switch
- Robot poses risk to arena, participants, or crowd

# 4. Team Structure

Teams may consist of up to 10 members, ideally covering:

- Programmer (remote control, AI)
- Electronics engineer (circuit, power)
- Mechanical specialist (mobility, weapons)
- Structural designer (frame, armor)
- Media/communications (branding, documentation)

# 5. Competition Format

The Robot Fight follows a single-elimination, 1 vs 1 match structure, starting with 16 teams and progressing toward the final.

## Bracket Flow

- Round of 16 → 8 Matches
- Quarterfinals → 4 Matches
- Semifinals → 2 Matches
- Finals

# 6. Combat Rules

- Two robots shall be placed in opposite corners of the arena.
- The objective of each will be to disable its opponent by any means within the rules.
-
- Arena Format: Enclosed for safety and visibility
- Match Duration: 3 minutes (+1 minute extension in case of draw)
- Victory Conditions:

- A bot that is completely motionless will be KO'd after a 10 second count
- immobile if it cannot display linear motion of at least one inch in a timed period of 30 seconds
- A bot with one side of its drivetrain disabled will not be counted out if it can demonstrate some degree of controlled movement
- Judge’s Decision (based on Aggression, Damage, Strategy & Control)

# Judging Criteria Details

| criteria | Description | Weight |
|---|---|---|
| Aggression | Frequency and initiative of attacks; willingness to engage | 30% |
| Damage | Actual physical harm done to the opponent (not superficial hits) | 30% |
| Control | Ability to steer, maintain position, and dictate match flow | 20% |
| Strategy | Effective use of the robot's design, traps, feints, or defensive behavior | 20% |

## Strategic Elements

- Repairs & Resource Management

Limited repair time between matches Only functional repairs allowed — no design changes

- Adapting Strategy

Teams can observe previous fights to analyze opponents  Tactics can be adjusted based on opponent strengths/weaknesses

# 7.Game Rules & Conduct

Afrobot upholds strict regulations to ensure fair play and safety. Violations can lead to warnings or disqualification.

## 1. Major Infractions – Immediate Disqualification

- Arena Damage: Creating holes, breaking arena parts
- Illegal Substances: No use of liquids, gases, explosives
- Unsportsmanlike Behavior: Violence, insults, cheating
- Combat Violations:

  Starting before the signal

  Physical intervention during match

  Exiting the arena to avoid defeat

Homologation Infractions:

Post-validation modifications o Swapping robots

Multiple pilots for one robot

## 2. Minor Infractions – Warning System

- Two warnings = elimination Examples:
- Delay in setting up robot
- Minor technical malfunctions
- Disobeying referee (without malicious intent)

# 8. Media & Documentation Requirements

Encourage or require teams to:

- Submit a short video intro or tech breakdown of their robot
- Document their build process (blog post, social media, or PDF)
- Bring a poster or display board if exhibiting in the innovation
- showcase This boosts the educational & promotional value of the event — great for sponsors, media coverage, and future editions..

# 9.Awards & Recognition

- Besides 1st, 2nd, and 3rd place, consider adding special awards:
- Best Engineering Design
- Most Innovative Weapon/Mechanism

# 10. Team Supervision via Discord

Each participating team will have a dedicated supervisor assigned to their Discord channel. The supervisor is available to answer questions, offer guidance, and monitor the team's progress throughout the preparation phase. They will also ensure that teams adhere to key deadlines, including the timely submission of the robot description and other required documentation.

**Note:** Submitting the robot description before the deadline is mandatory for all teams participating in the competition.

# 11. Robot Fight Arena Description

The Afrobot Robot Fight Arena is a closed and secured combat environment specifically designed to ensure high visibility for spectators while maintaining maximum safety for participants and their robots. Here's a detailed overview:

## Dimensions & Structure:

- Shape : Hexagonal  Size : 3.5m x 3.5m, offering ample space for one-on-one robot battles.
- Flooring: Smooth, flat surface, withstand high-impact collisions and movement from various drive systems (wheels, shufflers, walkers).

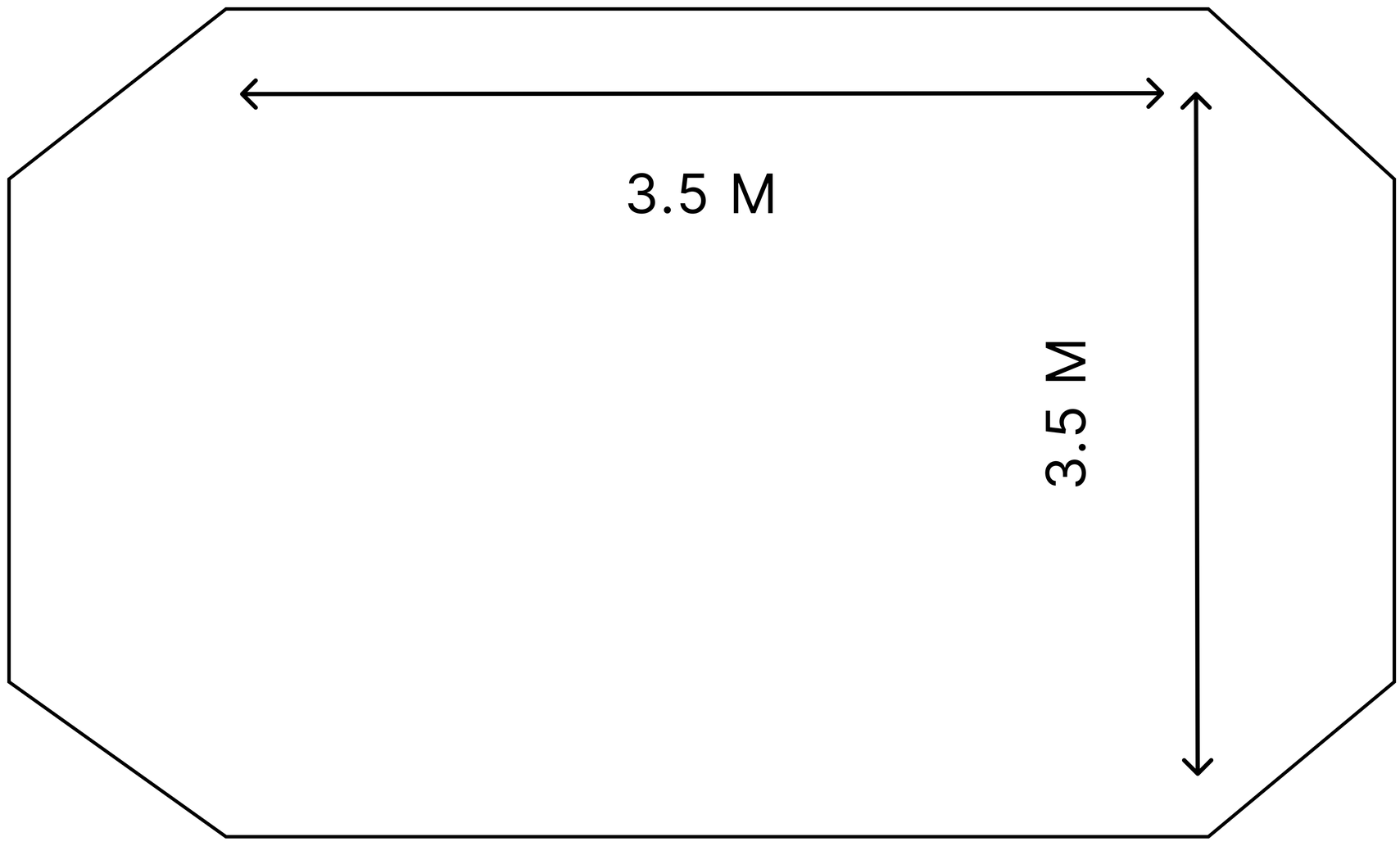
- Wall Barriers: Transparent walls, 1.2m high, enclosing the entire arena to:
- Contain robots .
- Allow 360° visibility for referees, judges,  and spectators.
- Prevent external interference during matches.

- Overhead Protection : a net panel used to prevent vertical projectile ejections.  Entry Point: A single, lockable access door used by staff to place or retrieve robots between matches .

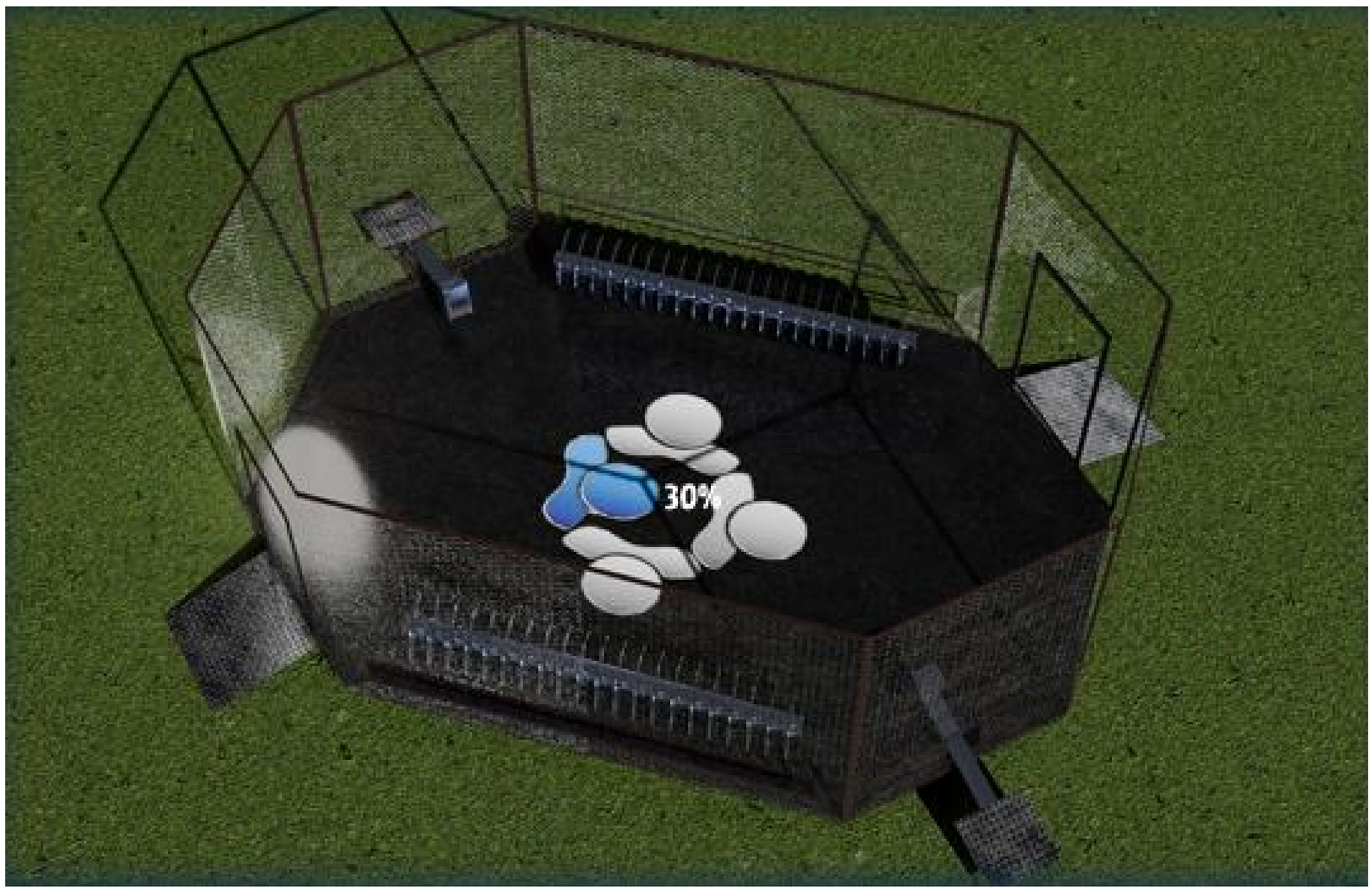
## Combat Functionality

- Battle Conditions: The arena can support fast-paced, physical combat including pushing, ramming, and active weapon use (within safety limits).

- Damage Zones:
- Hammer Zones: Equipped with overhead hammers that strike robots entering designated areas
- Cutting Blades: Rotating or fixed blades cause damage upon contact
- Elevated Floor Areas: Certain sections of the arena floor may be raised or sloped to allow for robot flips or throws



# Areana

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