Robotics Association of Nepal[RAN]

Talchikhel
Lalitpur, Nepal

Yantra International Robotics Competition 2023: Creating Robotics Industry of Nepal by 2030

Yantra Teens: Garbage to Gold

Garbage to Gold Event Book

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Introduction:

Welcome to Yantra Teens "Garbage to Gold." In this competition, we bring together the excitement of object gathering and precision shooting as two teams compete to accumulate the highest points where Robots have to collect garbage like plastics, metals and other waste materials and store them in recycling bins for reuse and recreate usable materials. This rule book outlines the guidelines, objectives, and regulations for a fair and thrilling contest.

Purpose:

The purpose of this competition is to:

- Aware youth about the concept of effects of Climate change and Climate Robotics.

- Aware the effects of plastic pollution, harmful gasses produced due to waste causing to Climate change

- Encourage teams to work together and use strategy.

- Robotic systems' abilities and precision are put to the test.

- Create a gaming environment that is both competitive and fair.

- Encourage robotics-related innovation.

Competition Overview:

Teams: Two teams compete in this challenge. Compartments: Each team has two compartments for object storage. Total Objects: There are a total of 50 objects available for gathering (30 plastic

& 20 metal). Phases: The competition is divided into three phases, each with specific objectives and rules. There are 40 balls (7cm diameter) too which the bots will pick and later use for shooting.

Dimension and Fabrication Guidelines:

- Machine Size Limitation: All participating robots must adhere to strict size limitations to ensure fair competition. Each robot must fit within a cubic box with a maximum dimension of 60 x 60 x 60 cm and minimum dimensions of 40 x 40 x 40 cm. This size constraint is essential to create a level playing field and encourage innovative design while maintaining a standardized field of play.

- Weight Limit: Robots must not exceed a maximum weight of 8.5 kg. This limitation ensures fair competition and safety for all participants.

- Multiple Robots: Teams are allowed to use multiple robots, provided that the total weight of all robots combined adheres to the 8.5 kg limit. This allowance encourages strategic diversity and creativity in robot design. Maximum three robots will be allowed.

- Robot types: Pick and Place and Self Sorting.

- Pick and Place robots: These are the simplest of robots that will pick an object and place them in the designated zones.

- Self-Sorting: These are the robots that are capable of picking up objects and store them inside their bodies. There should be individual compartments built within the body of the robot.

General Rules:

- Safety: Safety is of paramount importance. All robots and equipment must meet safety standards to ensure the well-being of participants and spectators.

- Fair Play: Participants and teams are expected to maintain the highest standards of fair play and sportsmanship throughout the competition. Unsportsmanlike behavior, including but not limited to cheating, disrespect, or harassment, will not be tolerated, and may result in penalties or disqualification.

- Referee's Decisions: Decisions made by the event referees are final and binding. Participants and teams are expected to respect and abide by the decisions of the referees during matches.

- Disqualification: Teams that violate the rules may face disqualification. Adherence to the rules is crucial to maintaining a fair and competitive environment.

- Team Identification: To ensure clear identification by referees and spectators, teams should prominently display their team identification and robot numbers during matches.

- Code of Conduct: All participants, including team members, mentors, and spectators, are expected to adhere to a code of conduct that promotes a respectful and inclusive environment for all.

- Liability: Participants and teams are responsible for their robots and equipment. Event organizers, sponsors, and venue hosts are not liable for any damage to or loss of robots or equipment during the competition.

Robot Specifications:

- Robot Size: Each robot must adhere to the specified size limitation of 40 x 40 x 40 cm to 60 x 60 x 60 cm, ensuring that all robots meet the required size criteria for fair and consistent gameplay.

- Weight Limit: Robots must not exceed the maximum weight of 8.5 kg. This weight limitation is crucial to ensure fair competition and safety for all participants.

- Multiple Robots: Teams are allowed to use multiple robots, provided that the total weight of all robots combined adheres to the 8.5 kg limit. This allowance encourages strategic diversity and creative robot design.

Arena Specifications:

- Arena Size: The arena is divided into two equal halves, 24 x 18 feet compartment divided into two halves. This setup provides an even playing field for both teams and adds an element of strategy to the competition.

- Compartments: Each team has three compartments in their respective halves, providing designated areas for objects and a Recycling Compartment.

- Containers: Within each half of the arena, there are three containers: one for plastic objects, one for metal objects, and one for balls. These containers are strategically placed to facilitate object gathering and shooting.

- Boundary Wall: The arena is enclosed by a boundary wall standing at a height of 15 cm. The wall serves to keep the objects and robots within the playing area and ensures a clear boundary for the competition.

Game Play Rules:

The competition is divided into three phases, each with specific objectives and rules:

Phase 1 - Object Gathering:

- Two teams, each with two compartments.
- Each team's compartment contains 45 objects, comprising 15 plastics, 10 metal objects and 20 balls.
- The game starts with both teams' robots placed at bot house.
- Phase 1 lasts for five minutes, during which teams aim to gather as many objects as possible with their robots.
- Pick and place robots can pick and place the objects at designated areas.
- Self-sorting robots can store and sort the objects inside their bodies.
- Objects must be placed in their designated zones for scoring.
- Scoring: Each metal object is worth 5 points, each plastic object is worth 3 points

Phase 2 - Object Collection:

- Phase 2 lasts for 3 minutes.

- A player (except bot pilots) enters the arena to gather objects that were not collected by the bot and places them in the compartments outside.

- The same player also segregates the objects collected by the bot and places them in the designated area.

- The team that finishes the segregation first receives a 15-point bonus, while the other team receives 5 points.

- If the arena is not clean (meaning the scattered objects are not placed on the compartment) after 3 minutes, then negative marking will be given by the referee.

Phase 3 - Object Shooting/Dropping:

- Phase 3 begins with one of the teams.

- Time for this phase is determined by the number of balls collected.

  Time for a team = number of Balls collected * 30 second

- In this phase, a player takes the collected ball and shoots the opponent's objects using the bot.

- Scoring: Each metal object storage is worth 5 points, and each plastic object storage is worth 3 points if the object falls and touches the recycle chamber line or crosses it. But if the object does not touch the line, then only half points will be given.

- The total points accumulated in all phases determine the winner of the match.

Event Rules:

- Safety: Safety of participants and spectators is paramount. All robots and equipment must meet safety standards.

- Fair Play: Teams are expected to maintain fair play and sportsmanship throughout the competition.

- Referee's Decisions: Decisions made by the referee are final and binding. Referees will enforce the rules and ensure fair play throughout the match.

- Disqualification: Teams violating the rules may face disqualification. Adherence to the rules is crucial to maintaining a fair and competitive environment.

- Team Identification: Teams should prominently display their team identification and robot numbers during matches to ensure clear identification by referees and spectators.

- Code of Conduct: All participants, including team members, mentors, and spectators, are expected to adhere to a code of conduct that promotes a respectful and inclusive environment for all.

- Liability: Participants and teams are responsible for their robots and equipment. Event organizers, sponsors, and venue hosts are not liable for any damage to or loss of robots or equipment during the competition.

Registration Details:

Early Bird Registration: Rs. 4000

Normal Registration: Rs. 5000

Late Registration: Rs. 7500

Certificate Policy:

- Certificate of Appreciation: Certificates of Excellence will be awarded to all the winners of the competition. These certificates recognize and celebrate the outstanding performance and achievements of the top-performing teams.

- Certificate of Participation (First Round Qualifiers): Certificates of Participation will be presented to all the teams that successfully qualify for the first round of the competition, acknowledging their participation and contribution to the event.

- Sponsor Certificate: Sponsoring entities will also receive a Certificate of Participation in appreciation of their support and partnership.

- Disqualification: Teams disqualified due to rule violations are not eligible for certificates.