

MAGNETO

Task:

Teams must build a remote controlled machine that can perform task of picking the ball and throwing it to the playing zone. The machine should be solely controlled by hand gestures.

Arena:

Arena consists of the following:

1. **Control Zone:** Bot can maneuver only inside this zone. There are three levels for throwing the ball. Level 1 - Dimension 800mm x 250mm, Level 2- Dimension 600mm x 250mm Level 3- Dimension 400mm x 250mm.
2. **Playfield:** Bot need to pick plastic ball of diameter 40mm from the throwing zone and throw it to the playing zone. Length and width of playfield is 800 mm. Playfield is divided into various zones which have points depicted by the colour codes.

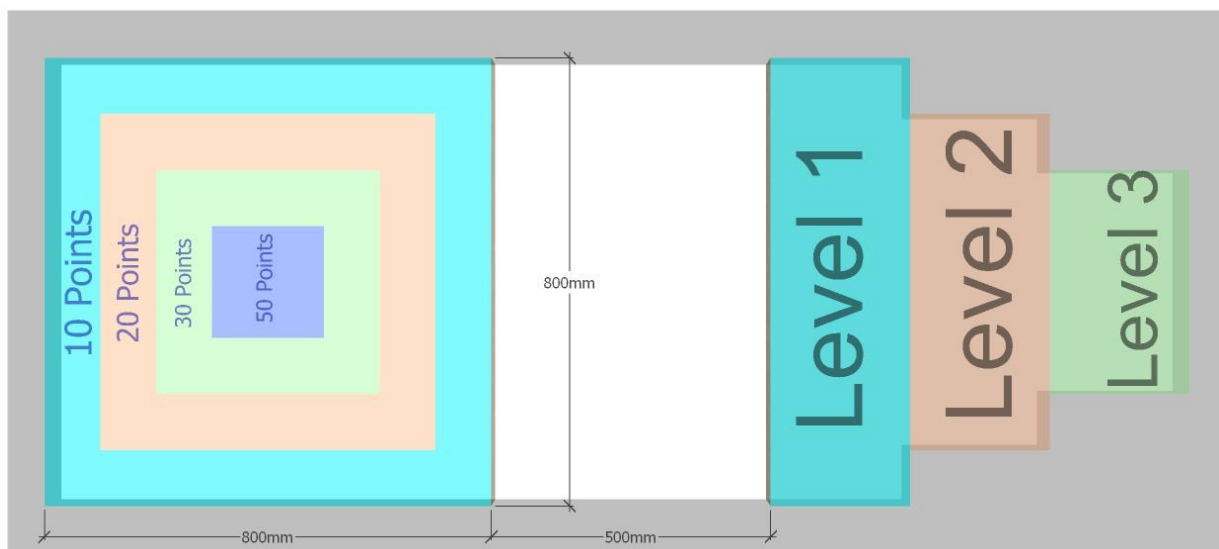


Figure 1: Top View

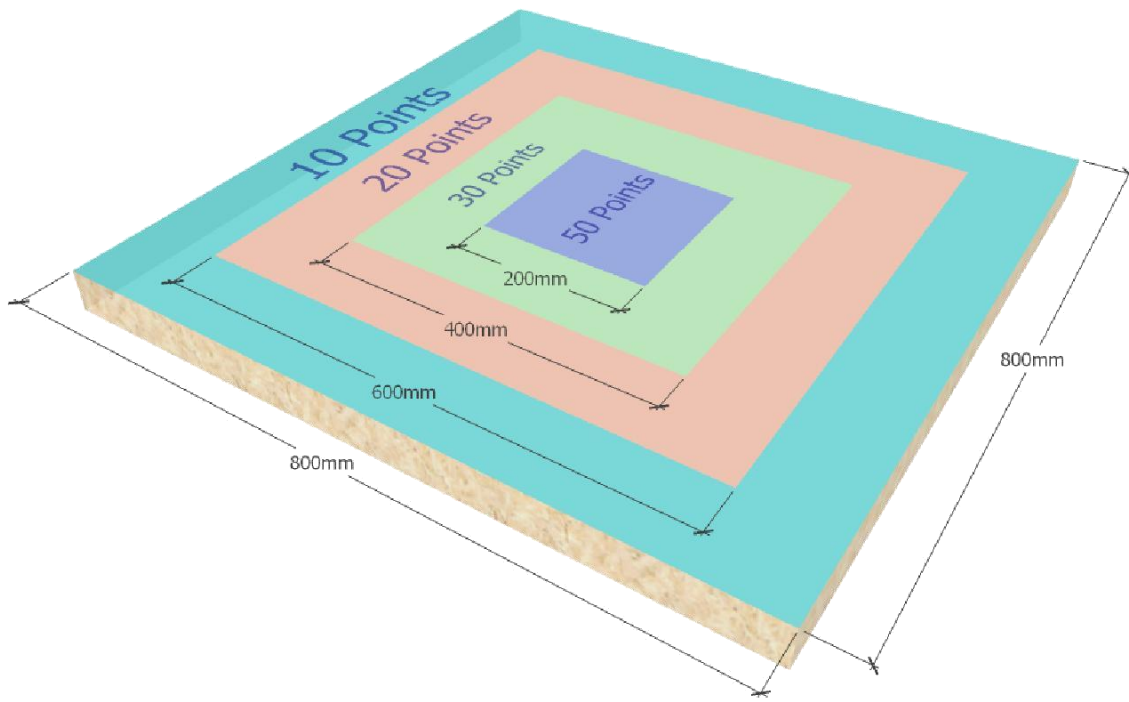


Figure 2: Main Arena

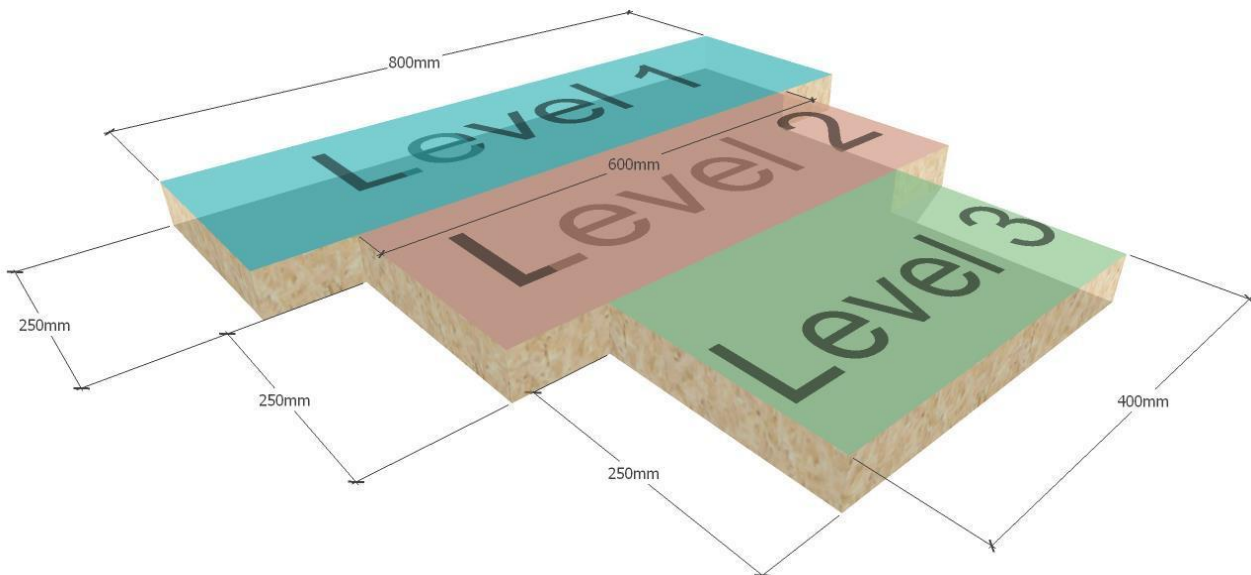


Figure 3: Throwing Zone

(Note:

The dimensions of the arena and ball will be accurate to within 5% or 20 mm, whichever is less. In the figures given below, colors are shown just for indication of sample arena. The actual colors may be different in actual arena.)

Specifications:**Bot Specifications:**

1. The bot must fit in a box of 250mm x 250mm x 250mm at **start of the game**.
2. Participants may use rollers to move the bot smoothly inside the control zone.
3. Participants are not supposed to use any readymade Lego components. However the participants are allowed to use readymade gear assemblies. **Violating this clause will lead to immediate disqualification of the team.**

Control:

1. The machine must strictly be controlled by hand movements of one of the team members only.
2. The participants have to bring 2 wireless controls of distinct frequencies or a dual-frequency control, which can be switched to either frequency just before the start of the run. This is done to avoid frequency interference with competing machines.
3. Participants failing to do so will be disqualified.

Power Supply:

1. The participants must use an **onboard** electric or non-electric power supply. However the power source must be non-polluting and must satisfy the safety constraints determined by the organizers. In case of non-electric power supply, the participants must get it approved from the organizers beforehand via email. Organizers are not responsible for the inconvenience if the approval is not sought.
2. In case of an electric power supply, the voltage difference between any two points during any point of time should not exceed 24V.

Gameplay:

1. Bot will start from centre of every level. 5 balls will be placed anywhere in each level. Ball can be placed also on some height ranging from 0 to 200 mm.
2. Each level consists of throwing 5 balls or 180 seconds whichever finishes first.
3. Anyone who qualifies Level 1 will have to go for Level 2. Similarly who qualifies Level 2 will have to go for Level 3.
4. For qualifying Level 1, a team must score 60 points. For qualifying Level 2, a team must score 80 points.
5. If ball falls at the line, you will get lower point out of two.

Rules:

1. The teams must adhere to the spirit of healthy competition.
2. The machine would be checked for its safety before the run and will be disqualified if found unsafe for other participants.
3. The bot will be liable for disqualification if it causes any kind of damage to the arena.
4. If the bot fails or damage at any point of time, the participant will be allowed to make any hardware changes in the bot and resume the game.
5. 150 seconds of repair time is given to each team. If a team is unable to repair its bot within the given time it is liable to be disqualified.

General Rules:

1. Organizers reserve the right to disqualify any team indulging in misbehavior or violating any rules.
2. Any team that is not ready at the specified time will be disqualified from the competition automatically.
3. The time measured by the organizers will be final and will be used for scoring the teams.
4. Time measured by any contestant by any means will not be accepted for scoring.
5. In case of any disputes/discrepancies, the organizers' decision will be final and binding.
6. 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.
7. Note that at any point of time, the latest information will be that which is on the site. The information provided in the pdf downloaded earlier may not be the latest. Scoring will be done only on the basis of latest information. However, registered participants will be informed through mail about any such changes.

Restarts:

1. If the bot fails or gets damaged at any point in the whole gameplay then the participant is allowed to take restarts. Participant is allowed to take maximum of 2 restarts.
2. If the bot fails, the game timer will be paused and a separate 'repair timer' will start at the same time. The total time in which participant can repair his bot is 150 sec including all three repairs. If the repair time runs out participant will be disqualified.
3. A contestant is not allowed to alter a bot in a manner that varies its weight (e.g. removal of a bulky sensor array or switching to lighter batteries to get better speed).
4. All restarts will require the approval of the organizers before the bot can be removed from the arena. If the bots were handled within the arena without approval, the run will be terminated.

Judging:

1. Points according to the playing zone will be awarded each time the ball first lands on that particular zone.
2. If ball goes out of the playing zone, there will be no points.
3. Team must qualify Level 1 and Level 2 for final score.

Final Score:

Final Score = Total points earned on throwing the ball to the playing zone in all Levels.

The team with maximum final score will be the winner. Team must qualify Level 1 and Level 2 for final score.

Team Specification:

A team may consist of a maximum of 4 members. Students from different educational institutes can form a team.

Eligibility:

All students with a valid identity card of their respective educational institutes are eligible to participate in the event.

Certificate Policy:

1. Certificate of Excellence will be awarded to top 3 winners.
2. Certificate of participation will be given if the team qualifies level 1.
3. Disqualified teams will not be considered for any certificate.