

MALNAD COLLEGE OF ENGINEERING
HASSAN, KARNATAKA - 573202

THE MALNAD TECHNICAL CLUB



ENIGMA' 22

**UNLEASH THE
MYSTERY OF TECHNOLOGY**

29TH OF MAY

ROBO EVENTS

RULEBOOK

CONTACT FOR MORE DETAILS:

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ROBO KOMBAT

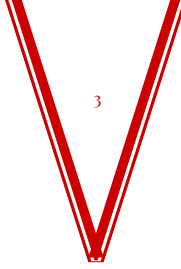
Steel smashing steel! RoboKombat is the ultimate battle of robots where Sparks fly! Metal crunches! A wheel pops free and ricochets off the arena! Competitors crave to be the lone survivor.



enigma22.in












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ROBO KOMBAT

Rules

-  Contestants will have to register online. On spot registrations can also be done.
-  A team can consist of a maximum of 5 members .
-  The bot has to be submitted to organisers 90min before the event.
-  The machine would be checked for safety during registrations. In case of unsafe bots, the team will be allowed to modify the bot within 90min. If the team fails it will be disqualified.
-  Only three persons (team members) are allowed to take part in the competition (within the demarcated area): one will control the bot, another will control weapons and third one will help with the control wires.
-  The wire coming out of the bot should be contained in a pipe (or other alternatives). Any kind of exposed wiring should be held together by cello tape.
-  Any kind of damage to the arena will not be entertained, a warning will be given and if done after the first warning, the robot will be disqualified.
-  All the required accessories have to be bought by the participants. The robot should not vary for each round.
-  No technical assistance will be provided by the coordinators during the time of the event.





 No practice runs will be provided.

 Provision must be made by the participants to show internal circuit when demanded by organisers for inspection.


 Jumping and hoping is not allowed.


Robot Specifications (Wired)

 The maximum dimensions of the bot should not exceed 60cmX60cmX60cm(+5% tolerance)(excluding remote controls and control wire).


 Weight of the robot should not exceed 50kg(+5% tolerance is allowed) (including remote controls and control wire).

Robot specifications (Wireless):

 The maximum dimensions of the bot should not exceed 60cmX60cmX60cm (+5% tolerance) (excluding remote controls and control wire).





 Weight of the robot should not exceed 40kg (+5% tolerance is allowed) (including Battery, Remote control and Control wires).

Robot Control Requirements






 The robot can be wired or wireless. For wired robots, all the controlling wires should be bound into a single strip and properly insulated for at least 3cm length from the robot base. It shouldn't get tangled with the opponent's wires. For wireless robots, use a four frequency remote control circuit or two dual control circuits to avoid the interface.



ROBO KOMBAT












-  Remote controls that readily available in the market may also be used with suitable modifications if needed.
-  The teams should pair up the wireless remote with the machine before putting it into the arena. • In case of wired bots, the wire should be at least 10m long and the wires should remain slack at any instant during the fight. All the wires coming out of the machine should be stacked as a single unit.
-  The wire coming out of the bot should be contained in a pipe (or other alternatives). Any kind of exposed wiring should be held together by cello tape.
-  Only three persons (team members) are allowed to take part in the competition (within the demarcated area): one will control the bot; another will control weapons and third one will help with the control wires.

Battery and Power:

-  The bot should be self-powered with battery not exceeding 48v. In case higher voltage is being used for weapons, please get the approval by organizers before that leads to disqualification.
-  Battery should be properly protected from the eternal damages.
-  Immobilized electrolyte types (such as gel cells, lithium, NiCad or dry cells) are not allowed.
-  230-volt AC source will be provided. Teams have to bring their own battery eliminators.
-  Also multiple rounds may be conducted back-to-back so the batteries are advised to be kept fully charged with backup battery(s).



Team Regulations

-  Teams of 2- 5 Members.
-  Multiple number of teams from same college are allowed
-  **The participants must carry valid student ID or Company ID cards of their college/company which they will be required to produce at the time of registration.**
-  An individual cannot be a member of more than one team
-  A robot cannot be shared by two or more teams
-  The robot should follow the specifications provided. Any deviation from the mentioned specifications will lead to direct disqualifications
-  Both wired and wireless bots are allowed
-  Structural Integrity of the bot should be maintained. Changes to structure between matches are not allowed.
-  Bots with wired controls should have dedicated person to hold the wires and prevent it from entangling
-  Wireless radio controllers shouldn't interfere with opponent's transmitter
-  The decisions made by the Judge panel will be final



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ROBO SOCCER

Soccer with robots!



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About the Event:

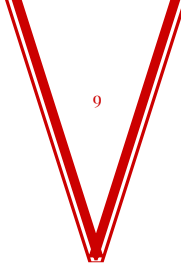
A manually controlled robot wired or wireless has to push the ball in opposite team's goal post and also it has to prevent opposite team from pushing the ball in their own goal post. Robots can have kicking mechanisms.

Game Play













-  This is a 1 on 1 type game.
-  The balls used will be tennis ball.
-  Robots will be placed in different halves of the arena with ball in centre of the arena.
-  Each team will try to score a goal by pushing the ball.
-  Team with the greater number of goals wins the match.
-  If the ball goes out of the arena, it will be placed in the centre and match will be resumed.
-  In case of a tie, 3 penalties would be taken by each team.

Robot specifications

-  The following size limitations apply for each robot, including whatever kick mechanisms the bot have:






ROBO SOCCER







-  Width – 300mm max
-  Length – 300mm max
-  Height – 300mm max
-  An error of ($\pm 5\%$) is permitted.
-  Weight: 5 kg (Tolerance of +5%)
-  The robot cannot have a potential more than 12V between any two points.
-  The external device, which is used to control the machine, is not included in the size constraint.
-  The machine can be wired/wireless.
-  The machine must not be made from Lego parts, or any ready-made assembly kits, however participants are allowed to use their own creativity for the kick mechanism.
-  The robot can be powered by a source such as a battery fixed on the robot or by a stationary power source connected to the robot by a cord.
-  Participants should keep spare batteries, otherwise it may lead to disqualification, if bot is not ready or stops in between the match.
-  The length of the wire (for wired bots) should be long enough to cover the whole arena and wire should remain slack during the complete game.

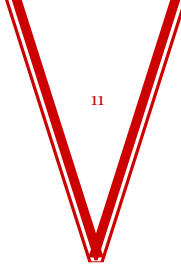


Arena Dimensions










-  The arena is made up of wooden ply of dimensions 8 feet in length and 6 feet in width.
-  The arena has a 20 cm wide goal post on either side.
-  The arena is bounded from all sides.

Rules & Regulations

-  A team can have a maximum of 4 members and minimum 2 members.
-  Only 2 members of each team may be present at a time in the arena. All other team members must remain outside the game zone.
-  Once the weight of bot is finalized no modifications in the weight will be allowed
-  Weight of the bot will be checked before starting each match
-  Each team will be given a time span of 2 minutes at the beginning of each half to make any changes or modifications to the bot (modification in weight is not allowed)
-  Every match will consist of 2 rounds of 2 minutes each and each subsequent round will have a time gap of 1 minute.







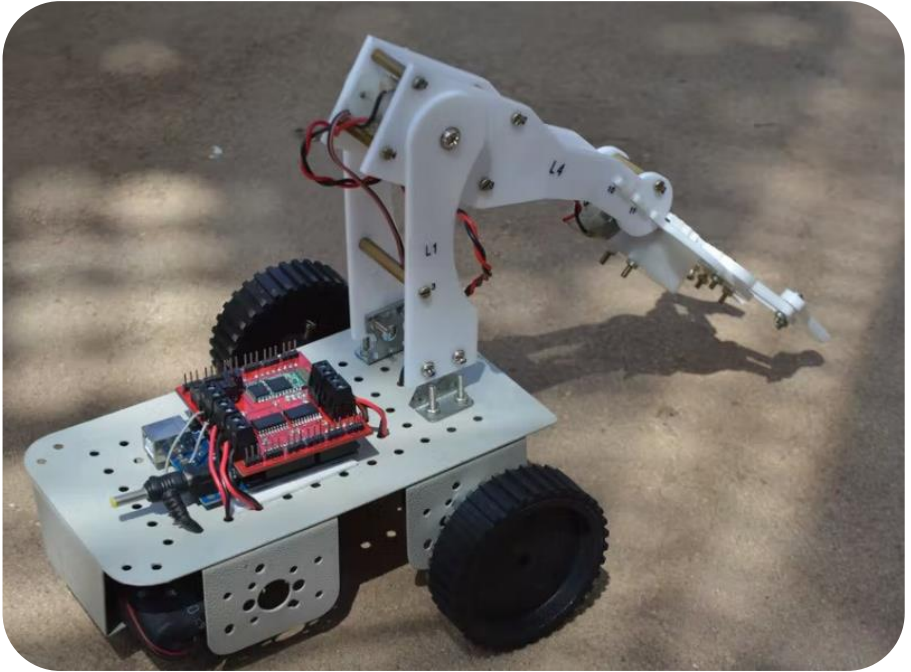
ROBO SOCCER

-  At the beginning, the bot must touch or hit the ball within 10 seconds. If it fails to do so, the opponent can move his bot.
-  If the bot becomes immobile during the match, the team will first be given 60 seconds to fix it without any loss of points.
-  If the team fails to fix it in 60 seconds, another 60 seconds will be given at the expense of 1 point. If the team does not repair the bot within this time, then it will be disqualified.
-  All the bots must have their own power supply
-  The match will be paused in case of any entanglement of wires of both the bots
-  If the ball is immobile for 10 seconds then the game will be reset and ball will be declared as common ball.
-  Participants who misbehave may be asked to leave the competition area and risk being disqualified from the contest.
-  Robots or participants that cause deliberate interference with other robots or damage to the arena will be disqualified.
-  All decisions about scoring, Game Play & timing, and participation, made by the Organizing Committee are final. Teams should completely respect their vote and decisions.



Judging Criteria:

-  For each goal scored by a team, 4 points will be awarded
-  If the bot damages the arena, the ball or the opponent bot (major damage), 2 points will be deducted
-  A warning will be given for not following the rules after which 2 points will be deducted for every warning
-  The winner shall be declared on the basis of the points scored



XTREME MACHINE

Magnetized with the world of bots? The future of the world is in the intelligent robots. This is a robotic contest to prove your mettle in dexterous design of a pick and place robot. Here, the perplexed gushing bots wander around the strategical arena to uphill the given task.











Rules

- 🔔 The students must carry a valid ID card of their college which will be required to produce at the time of registration.
- 🔔 Both online and offline registrations can also be done.
- 🔔 The robot can be wired or wireless.
- 🔔 A team may consist of a maximum of FIVE participants.
- 🔔 Only 2 members of a team are allowed to stay around the arena (for controlling and assisting) and a team is allowed to play with one robot only.
- 🔔 All the required accessories have to be brought by the participants. The robot should not vary for each round.
- 🔔 No technical assistance will be provided by the coordinators during the time of the event.
- 🔔 Readymade tool kits are NOT allowed.
- 🔔 Human interference (e.g. touching the robot) during the game is not allowed.
- 🔔 The team is NOT permitted to compete with more than one bot.
- 🔔 Teams will NOT be allowed to modify the bot during their trail.
- 🔔 Judge's decision will be Final.




XTREME MACHINE


Robot Specifications

-  The robot should be self powered with battery not exceeding 24V.
-  Robot powered by on board batteries must be sealed, immobilized within a thick shell of at least 5mm.
-  Immobilized electrolytic types (such as gel cells, lithium, NiCad or dry cells) are not permitted.
-  Single phase external 230V AC power will be supplied. Maximum voltage between any two points on the robot must not exceed 24 V DC or 240 V AC.
-  All efforts must be made to protect battery terminals from a direct shot and causing a battery fire.
-  Failure to do so will cause direct disqualification.

Robot Control Requirements

-  In case of the wired robots, the wires should remain slack at any instant during the event.

IN CASE OF WIRED BOTS THE WIRE SHOULD BE AT LEAST 5 METERS LONG.

-  In the case of a wireless system, it should have a minimum two/three frequency remote control circuit or two dual control circuits or a transmitter – receiver paired module so that the frequency interferences with opponent team can be avoided.



- 🤖 The teams should pair up the wireless remote with the machine before putting it into the arena.
- 🤖 Remote controls that are readily available in the market may also be used.






MYSTIQUE LOCOMOTOR

"The ultimate ATV challenge". Don't run away from challenges, run over them. Participants build an all terrain vehicle to master the terrain and race the bots against all hurdles on a custom designed track while staying balanced.










Rules

Machine Specification:

-  Machine should fit in a box of dimensions **500 mm x 500 mm x 800 mm** (l*b*h) at any moment. The external device which is used to control the machine is not included in the size constraint.
-  The machine should be controlled by a wired/wireless remote control mechanism throughout the race.
-  Machine must weigh minimum of 3 Kilograms and must not exceed 10 Kilograms.

Track Specifications (All Possible):

-  The track will be an all-terrain track with sharp turns and jumps. The machine should be able to cross, bumps, rough patches on the track.
-  Despite organizers efforts to keep the track quality intact, the track is subjected to undergo wear and tear as machines run over it. The machine is expected to be able to perform on such weakened track.
-  The track will fit under a square area of 20 *20 sq feet.
-  **Track may consist of following obstacles:**
Any type of rough terrains like Sand path, Sack Bridge, Slippery surface, Gravel, Small bumps, Ramps, Hole traps, Bridges, Valleys, etc.
-  The machine must not be made from Lego parts or any ready-made assembly kits other than the parts mentioned below.
-  **The machine may consists of:**
Gears, Differential gear, springs, shock absorbers, servo motors, batteries, wheels, wheel hub, Belt drives, Chain drives are allowed.
-  The tires used must have a maximum diameter of 6 inch. Readymade wheels are allowed.



MYSTIQUE LOCOMOTOR

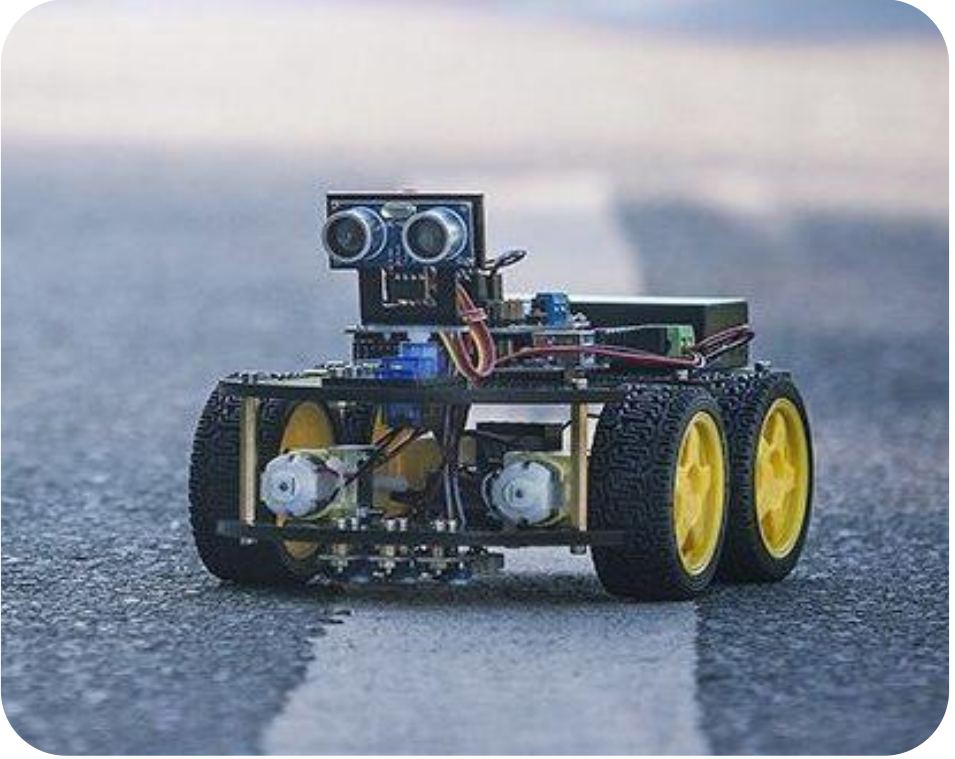
- 🔒 AC power supply of 240 volts will be provided. The machine must use only mechanical power generated by DC motors. Use of any other sources such as IC Engines, chemicals, compressed gas, rockets etc. is not allowed.
- 🔒 The electric voltage anywhere in the machine should not exceed 24V at any point of time.
- 🔒 The machine will be inspected and if found to be dangerous, the team will be disqualified. This decision rests solely with the judges and the organizers.
- 🔒 Use of pneumatic and hydraulic tools is not allowed.

Rules:

- 🔒 Team of maximum 5 members.
- 🔒 The team must adhere to the spirit of healthy competition.
- 🔒 The machines must undergo bot check by the organizers 90 minutes before the event.
- 🔒 Only one person can control the machine and one person can stay near the arena for monitoring the machine (Includes electrical).
- 🔒 The operator has to control the machine from the given place only.
- 🔒 The task should be accomplished within the given time.
- 🔒 The track will have check points at regular intervals. If a bot tumbles, or halts, or goes off the track at any point, one of the organizers will reset the bot to the previous checkpoint. The time shall still be running in the meantime.



- ⚙️ If the bot is unable to pass through any obstacle, the bot will be permitted to skip the obstacle (with the operator consent) with a penalty of 90 seconds, to the time taken by the bot to complete the whole track. The machine is allowed to skip only one obstacle throughout its course around the track.
- ⚙️ Team members are not permitted to touch their machines during the race. In case of any minor damage to the bot, the team members will be permitted to repair their bot.
- ⚙️ The time consumed for repair will be added to the time consumed by the machine to complete the track.
- ⚙️ The overall time taken by the bot to complete the track also includes REPAIR TIME.
- ⚙️ (If any) and time of 90 seconds for skipping the obstacle (if any) and it must not exceed the total given time.
- ⚙️ The machine which reaches the destination in the least time will be declared as the winner.
- ⚙️ In case no machine reaches the destination within the given time then the machine which reaches the farthest distance will be declared as the winner.
- ⚙️ the machine will be allowed to race again.
- ⚙️ Organizers will not provide any kind of accessories during or before the event.
- ⚙️ Only the participants of the team whose match is on are allowed to stay near the arena during the event and if there are any clarifications, only the participants are expected to communicate with the judges/organizers, in case any person other than participants interferes, the team will be disqualified at the spot without any further discussions.
- ⚙️ The organizers reserve the right to change any or all of the above rules as they deem fit.
- ⚙️ Violation of any of the above rules will lead to disqualification.
- ⚙️ The judges' decision shall be final binding on all.



TRAILBLAZER

"An event specially meant for tronix geeks"
Trail blazer has been a sensational event of the time. An autonomous robot traverses the given path with thrilling speeds and meticulous precision. One is sure to witness a rip-roaring virtual war amongst the geeky programmers.











Round 1

In this round the basic line following mechanism is tested. The robot should reach the end point without deviating from the line. The path may contain curves, 90 degree turns, etc. A maximum of 2 trials are given to each team before the game begins.

Round 2

This round will have more challenging arena than first round. This round may have very sharp curves, loops, misleading junction's discontinuities etc. It consists of 2 paths which are mirror images of each other and are interconnected. Teams will compete against each other in a one-on-one battle to reach the final destination. The team that reaches the destination first wins.

Robot Specifications

-  The robot should fit inside a cube of 25 cm side (+5% tolerance).
-  Robots should have an easily reachable emergency stop button which interrupts the power supply of the actuators. On demand of the jury or in imminent danger, a team member has to stop the robot immediately.
-  Robots have to operate autonomously and should not be remote-controlled.
-  All systems (like sensors, power supply, data-processing and control-systems) have to completely reside on the robot.
-  Robot should be powered only by means of internal power supply on the board. No external power supply should be provided.
-  No limitation as such in the motors. The wheels used must be non-destructive to the surface.



SPUDZOOKA

"The one behind the gun lives forever".





SPUDZOOKA



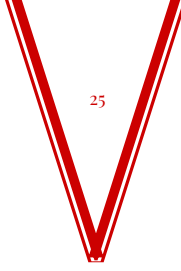
Rules

- 🔔 Spudzooka! is a team event. Each team shall have a maximum of three members.
- 🔔 Participants from different institutions can also comprise a team.
- 🔔 A participant can be a member of only one team.
- 🔔 Participating team must have a brief idea about the design and working of the model.
- 🔔 There is NO elimination of teams in transition rounds.
- 🔔 Winner team will be declared on the basis of cumulative points earned by the team.
- 🔔 Any modification in the design of spud gun is allowed (Eg: LASER pointer, Stand etc).
- 🔔 Failure of any spud gun during the event will be considered as disqualified.

Tips and Hints

Fuel

In case of combustion based spud guns, Fuels in liquid and gaseous states are allowed. Solid fuels such as gun powder or crackers are not allowed



SPUDZOOKA

Projectile

Teams should bring their own projectiles. Please note that the projectile should not be hard like Golf ball. Tennis balls are allowed. If at all customized projectiles are made e.g. clay/plaster of Paris, paper balls, wet paper balls etc ball they must be wrapped in sufficiently thick cloth before firing as the cloth provides necessary packing inside the barrel. Make sure you have enough number of projectiles (20-30 no.) if they are destructible

Sparking

Kitchen Gas Lighter, BBQ lighter, flint wheel lighter used in cigarettes lighter etc are good sparking agents.

Visit the following links for more information:

<https://www.youtube.com/watch?v=ykF3TUTI2hU>

<http://www.instructables.com/id/Sprinkler-valve-air-cannon/?ALLSTEPS>

<http://minabema.blogspot.in/2012/10/how-to-make-potato-cannon.html>

<https://www.youtube.com/watch?v=CejsxceoSgc>

CONTACT FOR MORE DETAILS:

P R A T H I K : 8 6 6 0 1 1 2 5 6 4

H E M A N T H : 9 0 0 8 3 4 9 4 9 3