



SCIENCE AND TECHNOLOGY COUNCIL
TAKNEEK '18
ON THE SHOULDERS OF GIANTS



 **Robotics**
Club IIT Kanpur
WILD SOCCER

Pool Event | Points: 50

Points: 50

General Rules:

1. A team consists of students from same pool.
2. Each team will have a wild soccer captain. All type of communication with the match officials can be done by the captain only. Wild soccer captain cannot be a SnT secretary, Hall captain or pool captain of any hall and should be from 1st year or 2nd year only.
3. Each team can have a maximum of 3 participant on stage at the time of the event.(One of them must be the wild soccer captain)
4. Only students from 1st and 2nd year are allowed onstage.
5. Before the start of every match, dimension and weight of all the robots will be checked in the presence of match officials and the wild soccer captains of the participating teams. Any robot violating the mentioned specification will not be allowed until the robot is within the specified dimension and weight.
6. The organizers reserve the right to change the rules as they deem fit.
7. Judge's decision will be final and binding to all.

Gameplay:

1. 3 teams will be playing a match at a time.
2. Each team will have to come up with a maximum of 2 manually controlled robots (only one robot will be in play at a time).
3. There will be 3 goal posts (one belonging to each team) decided by lottery.
4. A ball will be placed at the centre at the start of every round. Each team will have to put the ball in their goal post to score a goal.
5. The initial positions of the robot will be inside a defined area which will be near to your goal post. At the start of every round, robots should be completely inside the predefined area.



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- At the start of every round, each team will have to place their robot in its initial position area (Teams can choose to withdraw their robot from the round).
- The referee will place the ball in the middle and after a count of 3, the round will begin irrespective of the presence any robot (If all the teams refuse to put their robot in the arena, the match will end immediately and result will be announced in accordance with the score at that time). During the count, no one should touch or move their robots by any means.
- A round cannot be paused except in the following situation:
 - Safety issues (e.g. smoke, fire).
 - Other reasons brought up by the referee.
- The game will consist of two halves of 10 minutes each. There will be a break of 5 minutes between two halves.
- Wired robots cannot completely enter the initial position regions of the opposite two teams.
- If all the teams do not turn up for their match on time, a warning call will be issued 5 minutes after the due time and 5 minutes after the warning call the match will begin. If no team turns up after the above declared procedure, the match will be cancelled and none of the team will receive any point.
- Gripping or Sticking of the ball by the robot is not allowed.
- Ball should never be more than 7.5 cm inside the robot.

Points Structure:

- 10 points will be awarded for each goal.
- In case of a penalty, 5 points will be deducted.
- The team with maximum points wins the match. The team with second highest points will be runner-up.

Warning and Penalty:

- 2 warning will result in a penalty.
- Warning will be given for following fouls:
 - Moving the robot before the whistle.
 - Human intervention during the round or during the count.
 - Wired robot fully entering the restricted zone.
 - In case of wired robot, influencing the game by wire.
 - Ball being more than 7.5 cm inside the robot.
 - Misbehavior with match officials.
 - Other reasons as brought up by the match officials.



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Robot Specifications:

1. Robots can be wired or wireless.
2. Robot cannot not be more than 500mm × 500mm × 500mm (length × breadth × height) at any time of the match.
3. Maximum weight of the robots are as follows:
 - a. Wireless: 15 kg(Excluding controller only)
 - b. Wired: 10 kg (Excluding battery only)
4. Teams have to show and declare both of their robots before the start of the tournament.
5. In case of wired robots, wire should be slack at all times. Slacked wire should always be more than 40 cm from the ground.
6. No major changes in the robot would be allowed after the above mentioned declaration.
7. Voltage difference between any two terminals cannot be more than 36V.
8. No tolerance will be allowed in any of the above mentioned specification.
9. All the above specifications will be checked by instruments that will be declared beforehand and will be available for the participants at all times.
10. Robots can have any kind of magnetic weapons, cutters, flippers, saws, lifting devices, spinning hammers etc. as weapons.
11. Use of pneumatics and hydraulics are allowed.
12. Pneumatics Robot can use pressurized non-inflammable gases to actuate pneumatic devices. Maximum allowed outlet nozzle pressure is 8bar.
13. Hydraulics Robot can use non-inflammable liquid to actuate hydraulic devices e.g. cylinders.
14. No wireless module or components will be provided by the club. Teams can use one of the following suggested wireless module.
15. Any home built control system, or a control system not covered here, must be first cleared with the coordinators.

Limitations:

1. Liquid projectiles.
2. Any kind of inflammable liquid.
3. Flame-based weapons.



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4. Any kind of explosive or intentionally ignited solid or potentially ignitable solid.
5. High power magnets or electromagnets.
6. Radio jamming, Tasers, tesla coils, or any other high-voltage device Mobility.
7. All robots must have easily visible and controlled mobility in order to compete.
8. Flying is not allowed.

SUGGESTED WIRELESS MODULES

2.4 GHz WIRELESSMODULE

With a RANGE OF OVER 200M and NO FREQUENCY CLASH, this wireless module can be interfaced to your robot using the below motor driver. The PHOENIX SERIES motor drivers directly interfaces with any 2.4Ghz aircraft control systems, giving you a hassle free control over your robot for a very long distances (>200metres) and has many channels which can also be used for operating your weapons in combat robot using our WHIPLASH SERIES weapon controllers.

Specifications

- a. 2.4 GHz Carrier Frequency
- b. Commonly available in 2, 4 and 6channels
- c. Range of over200m
- d. No Frequency clash
- e. Interfaces with Phoenix Series Motor Drivers and Whiplash Series Motor Drivers
- f. Plug and Play

CC2500 RF Module

This CC2500 Based Wireless module is a plug and play replacement for the wired Serial Port (UART). This CC2500 based Wireless module allow engineers of all skill levels to quickly and cost-effectively add wireless capabilities to virtually any product.

Specifications

- a. 2.4 GHz Carrier Frequency
- b. 255 possible channels
- c. RS232 UART interface with variable baud rate
- d. Plug and Play
- e. User friendly GUI for setting up RFModule



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ZigBee Wireless Module

This is long range high speed serial wireless communication module which can give range of 30 meters indoor or 100 meters outdoor. This module is ideal for robot to robots or robots to PC communication. This ZigBee wireless device can be directly connected to the serial port (at 3.3V level) of your microcontroller. By using a logic level translator it can also be interfaced to 5V logic (TTL) devices having serial interface. This module supports data rates of up to 115kbps. It has indoor range of 30 meters and outdoor RF line-of-sight range of up to 100 meters.

DTMF Module

This module is based on the concept of DTMF Decoding. One can use mobile phone to control the bot.

RF Remote Control Module

Modified RF Modules can be used to control wireless bots. But for every frequency you use, you need to have an alternate frequency readily available (i.e. if you are using 3 frequencies then you need to have 3 more alternate frequencies readily available)

Arena:

1. The arena will be circular of diameter 5m.
2. Dimension of goal posts: 80cm×80cm (height ×width).
3. The ball will be a smooth plastic ball of 15cm diameter and negligible weight.
4. All dimensions are subjected to ±15% change.

Tournament Format:

1. Tournament will be divided in two parts: League and Finale.
2. In every match of the league following point distribution will be followed:
 - a. 1st Position: 5 points.
 - b. 2nd Position: 3 points.
 - c. 3rd Position: 0 points.
3. In case of a tie, points will be equally shared.
4. Top 3 teams from the league will proceed to the finale.
5. In case of a tie in the table, a match of one half will be played between the tied teams.

All the best!

#HappyRoboting!

Coordinators, Robotics Club!

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