Event Guide
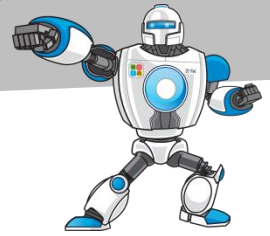
1) Participants **MUST** register themselves at the competition venue at 8.30 a.m.

2) Batteries are **NOT PROVIDED** by the organizer, participants have to prepare themselves.

3) Participants **MUST** bring along all necessary items (Laptops, batteries, robotics parts) as they are **NOT ALLOWED** to leave the quarantine area when quarantine begins.

4) Uniform and participant pass given during registration **MUST** be worn throughout the match.

5) Teachers/Parents are **NOT ALLOWED** to have direct communication with the participants during the quarantine. If they have any urgent request, kindly approach our staff.

6) Participants are **NOT ALLOWED** to make phone calls or leave the quarantine area. For any urgent matters, kindly approach our staff.

7) Participants will be disqualified if they **DO NOT** reach the quarantine area on time.

8) All participants who **DO NOT** follow the rules and regulations or instruction from admin staff or judges will be disqualified.

9) All participants are required **TO STAY** until the end of event.

10) **STRICTLY NO** Eating in the competition Hall.

11) Participants should take care of personal belongings as the organizer will **NOT BE RESPONSIBLE** for any losses.

12) As the venue is a public location, students are reminded to observe their behaviors at all times.

13) Please **DO NOT DAMAGE** the venue properties. The organizer will not be liable for any damages and serious action will be taken.

14) All photographs, video, details of schools, students and data belong to the organizer and may used for marketing, social media network, research and development without further consent or notification

General Rules and Regulations

1.0 Common

    1.1 The organizer **reserves** the right to disqualified any participants if found **violates** any rules.

    1.2 In the event of any disagreement or misunderstanding, the judges' decision will be **final**.

    1.3 If there are any changes to the rules and regulations, it will be announced to all participants 10 days before the competition starts. The judges will have **full authority** to explain and enforce the rules for all the individual events.

    1.4 During the competition, if there is any un-predictable situation occur that may need to change the existing Rules of the game, we required at least 4 IYRC members from different country to discuss and make a final decision.

    1.5 Participants will be disqualified after **2 fouls** are given during the competition.Fouls:

        1.5.1   Communication with spectators or other participants

        1.5.2   Carry storage devices including MP3 player, PMP, USB memory

        1.5.3   Use of part of robot that is not authorized before match

        1.5.4   Touching or damaging other participant's robot, laptops, or belongings

        1.5.5   Not obeying judges' order. Disrupting order

   (Violators of 1.5.2, 1.5.3, 1.5.4 are disqualified at the first time)
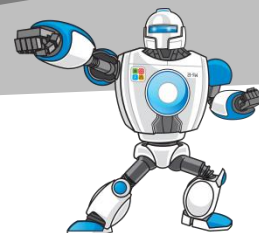
2.0 Competition

    2.1 Prior to the start of the competition, all robots will undergo an inspection. If the robots do not meet the requirements, participants will be given a grace time of **15 mins** to modify their robots, otherwise the participants will be disqualified.

    2.2 If the robots encounter any technical difficulty before the start of the match, they will be given **5 mins** to do the changes to the robot.

    2.3 Judges can assign practice playfield and restrict practice time perparticipant / team to ensure equal and fair practice time.

    2.4 Remote Control

        2.4.1   Zigbee / Bluetooth / 2.4Ghz Wireless, Smartphone are allowed for LINE Core M Humanoid only. MRT series robot kits are only allowed to use MRT remote control.

        2.4.2   In case of communication confusion, both teams are disqualified if they cannot fix the problem to proceed the match by changing communication channels.

        2.4.3   Robot can only move after judges declare starting of competition.

    2.5 All robot **parts are not allowed to drop** while the match is in progress. Judges may take necessary action against the teams that dropped their robot parts that could affect on-going matches.

    2.6 Participants are **not allowed** to touch their robots and/or remote controls during the competition unless instructed by the judges.
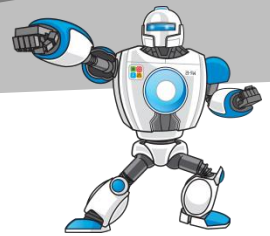
3.0 Scoring

3.1 Participant should confirm his competition result and sign right after the competition. Participant cannot have objection regarding result recorded after the confirmation.

3.2 In the event of time record, time is measured from robot crossing starting line and measured by time measuring instrument to robot crossing END point and measured by time measuring instrument.

    3.2.1 If time measuring instrument cannot recognize robot, then robot can restart at most three times. Participant should change structure of robot, so that time measuring instrument can recognize robot.

    3.2.2 In case of blackout or malfunction of time measuring instrument, time is measured by judge's stopwatch.
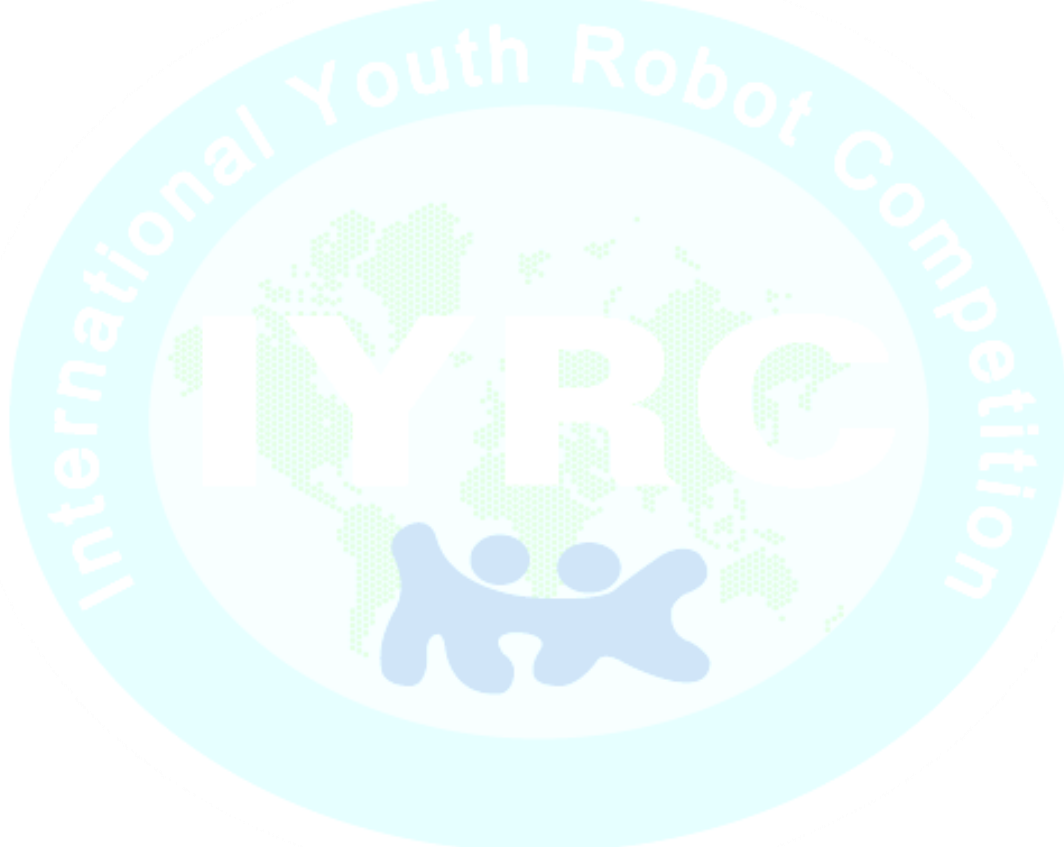
List of awards

Junior Categories

All winners will be awarded with trophy and certificate.

	Category	Grand	Gold	Silver	Bronze	5th	6th
1	R-Sports Mission – (Bowling)	1person	1person	1person	1person	1person	1person
2	Push-Push Junior	1person	1person	1person	1person	1person	1person
3	Road Challenge Junior	1person	1person	1person	1person	1person	1person
4	Coding Mission Junior (Rescue Robot)	1person	1person	1person	1person	1person	1person
5	R-Sports Mission (Volleyball Junior)	1 team	1 team	1 team	1 team	1 team	1 team
6	R-Sports Mission (Soccer)	1 team	1 team	1 team	1 team	1 team	1 team
7	Creative Design Junior	1 team	1 team	1 team	1 team	1 team	1 team

Senior Categories

All winners will be awarded with trophy and certificate.

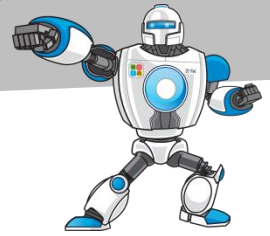|	Category	Grand	Gold	Silver	Bronze	5th	6th
1	Push-Push Senior	1person	1person	1person	1person	1person	1person
2	Coding Mission Senior (Fire Fighter)	1person	1person	1person	1person	1person	1person
3	R-Sports Mission (Volleyball Senior)	1 team	1 team	1 team	1 team	1 team	1 team
4	Creative Design Senior	1 team	1 team	1 team	1 team	1 team	1 team

Open Categories

All winners will be awarded with trophy and certificate.

For Maker Challenge, Top 5 teams will get cash prize reward of USD$1000 (Grand), USD$500 (Gold), USD$250 (Silver) , USD$150 (Bronze) and USD$100 (5th)

*** If there are more participants join this game, IYRC organizer may consider to provide more awards.

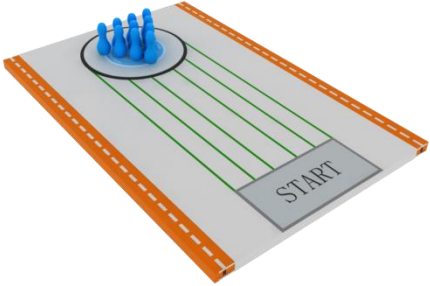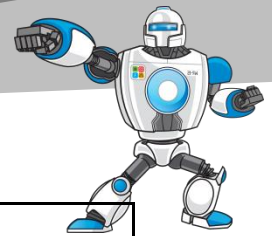|	Category	Grand	Gold	Silver	Bronze	5th
1	Maker Challenge	1 team	1 team	1 team	1 team	1 team
2	LINE Humanoid (Hockey)	1 team	1 team	1 team	1 team	-
3	LINE Humanoid (Boxing)	1person	1person	1person	1person	-

IYRC 2017

JUNIOR

(Age:6-12)

Categories

1. **R-Sports Mission – (Bowling)**
2. **Push-Push Junior**
3. **Road Challenge Junior**
4. **Coding Mission Junior (Rescue Robot)**
5. **R-Sports Mission (Volleyball Junior)**
6. **R-Sports Mission (Soccer)**
7. **Creative Design Junior**

IYRA
International Youth Robot Association

www.iyrc.org

1) R-Sports Mission – (Bowling Junior)

Age	6-8 years old
Team	Individual
Robot Kits	Goma and Brain only
Mission	Card programming robot to throw ball to knock down pins from start point
Robot Building	Pre-built and on site card programming
Game Method	Mission completion

1.0 Objective

To provide an event that required students to built a robot that able to throw a ball to knock down as many pins as it can , the robot must program by using card reader.

2.0 Robot Dimensions and Weight

2.1 The size of the robot at the starting box shall not exceed **35cm by 35cm by 35cm.** However, robots are **allowed to expand** to any size after the game starts.

3.0 Restrictions on Robot design

3.1 ALL Robots (whole or subdivided) must be using Goma Brain mainboard as core processor.

3.2 Participants have to use their own programming card. Organiser will only provide card reader for participant.

3.3 The robot must not have any foreign part (included rubber band, black tapes and scotch tapes). If found guilty, the player would be IMMEDIATELY disqualified.

3.4 Robots shall not damage any part of the field or obstacles deliberately.

3.5 Robots are not allowed to have any power supply above **6V DC (Volt of Direct Current)**. VAC (Volt of Alternating Current) power supplies are strictly prohibited for safety reasons.

3.6 Robots shall not cause any danger to the arena and surroundings in anyway whatsoever.

4.0 Game Rules

4.1 Robot must always stay in the start box. If the robot exceed the start box when shooting, the attempt is a foul play and no point will be given to the participant for the attempt.

4.2 Each of the participants given only 3 minutes
1.) To program their robot using command cards and card reader .
2.) After programming, student may operate the robot to start the game.

4.3 Participants have 3 attempts with 3 balls (Goma L-Gear) to hit the pins. Each thrown can used 1 ball (Goma L-Gear) only.
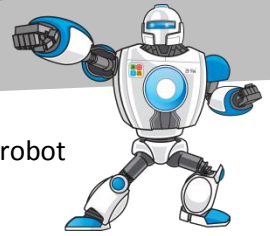
4.4 During competition, participants are allowed to touch or hold robot in case the robot fall down when throw out the ball.

4.5 The number of pins knocked down is calculated and recorded.

4.6 Each knocked down pin scored 1 point, Total point for each attempt is 10, so total 3 attempts can score 30 points.

4.7 Total points of three attempts are added and the participant with higher point becomes the winner.

4.8 If less than 10 pins being knock down in first attempt, the remaining pins have to knock down in the second attempt and so on.

4.9 If all 10 pins being knock down(strike) in the first attempt, 10 pins will be replace for second attempt and so on.

4.10 The time taken for pins replacement will not counted in the 3 minutes.
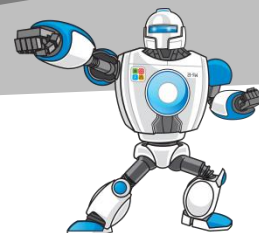
4.11 In case of same points occur, the point of first attempt is taken into consideration to determine the winner. If the first attempt has the same points too, the second attempt will be taken to determine the winner and so on. (The participant with higher point in first attempt is the winner.)

4.12 In case of points for each attempt is the same, will continue the final round to get the winner.
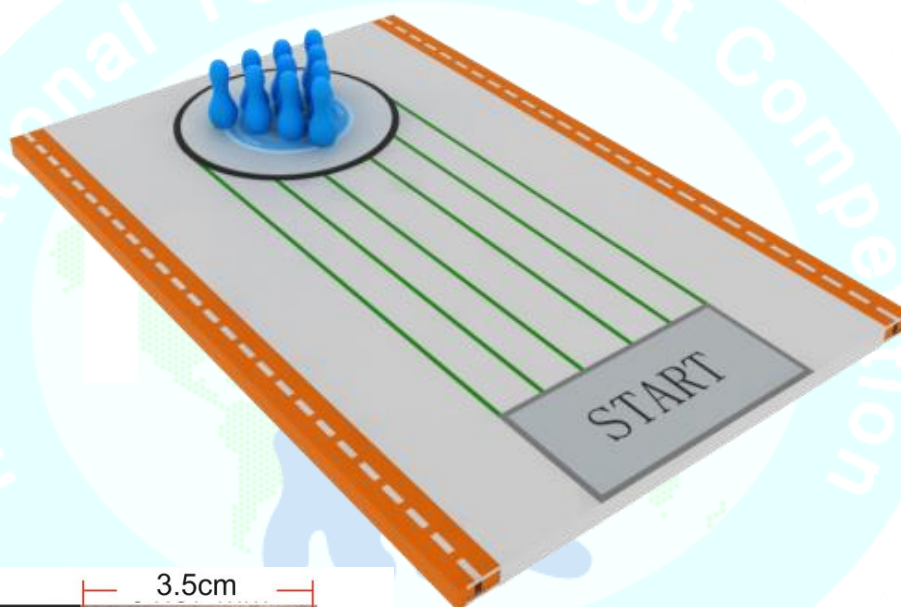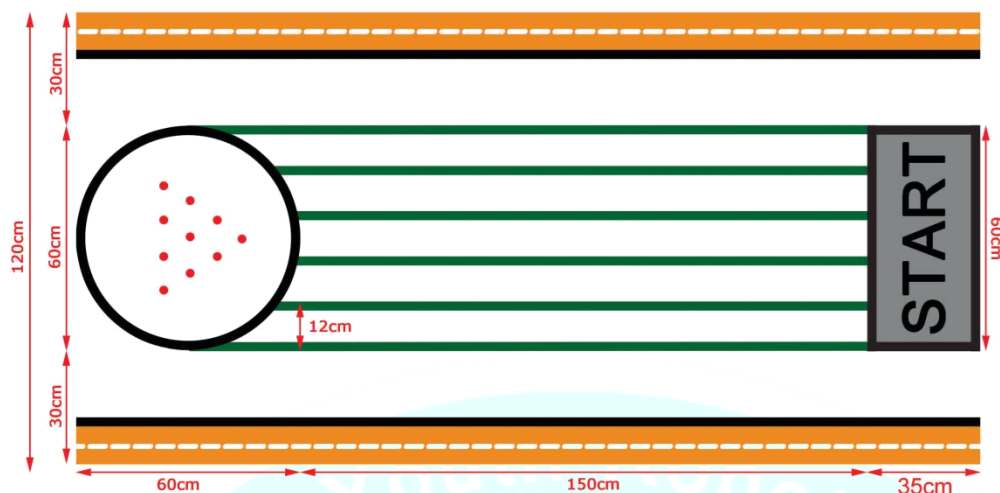
4.13 Example of score sheet:
- Participant B, C, D, E have the same total points.
- Participant E is ranked higher than participant C because E have higher score during first attempt.
- The first attempt score of participant B and E is the same, hence score of second attempt is compared to determine the winner.
- Participant C and D have same total points and same point for each of their attempt, hence they will continue the final round to get the winner. Participant C gets a higher rank because he win participant D in the final round.

Age	Name	1st	2nd	3rd	Total points	Ranking
6	A	10	10	10	30	1
7	B	4	3	1	8	3
6	C	3	4	1	8	4
8	D	3	4	1	8	5
7	E	4	4	0	8	2

5.0 Game Field
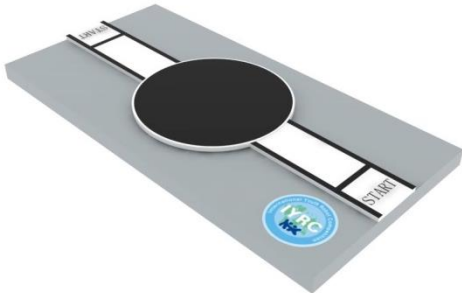
Bowling Pin Dimension

Bowling Pin Pattern

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2.) Push-Push Junior

Age	7-12 years old
Team	Individual
Robot Kits	Hunarobo / MRT3/ MRT5 only
Mission	Remote control robot to pass through the runway and push opponent outside of the black ring
Robot Building	Pre built remote controlled robot
Game Method	Tournament

1.0 Objective

Test and challenge the student ability to construct and program a robot with high stability and controlling skill to pass through the runway and push opponent out of the ring.

2.0 Robot Dimensions and Weight

2.1 The size of the robot at the starting box shall not exceed **20cm (H) by 20cm (W) by 20cm (L)** Refer to the robot specification diagram. However, robots are **allowed to expand** to any size after the game starts.

2.2 The maximum weight of the robot is 700 grams (Include batteries).
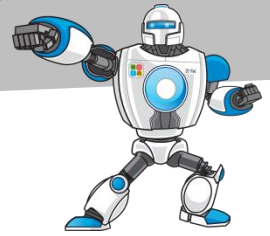
3.0 Restrictions on Robot design

3.1 Only HUNAROBO/ MRT3/ MRT5 parts are to be used to build the robot. There is no limitation to the amount of blocks used to build the robot. You are allowed to cross use the parts from the above mentioned systems for the robots.

3.2 However, ONLY maximum **2 number of DC motors,2 number of servo motors and 1 mainboard** are allowed to use for the competition,There is no limit on other electronic parts..

3.3 You are only allowed to modify the mechanical parts (painting/folding) but not electronic parts. If found guilty, the player would be IMMEDIATELY disqualified.

3.4 Robots shall not damage any part of the field or obstacles deliberately.

3.5 Robots are not allowed to have any power supply above **9V DC (Volt of Direct Current)**. VAC (Volt of Alternating Current) power supplies are strictly prohibited for safety reasons.

3.6 Robots shall not cause any danger to the arena and surroundings in anyway whatsoever.

3.7 Robots will need to protect their sensors if necessary from any outside interferences.

3.8 Robots RC receivers will need to be protected from any outside interferences.
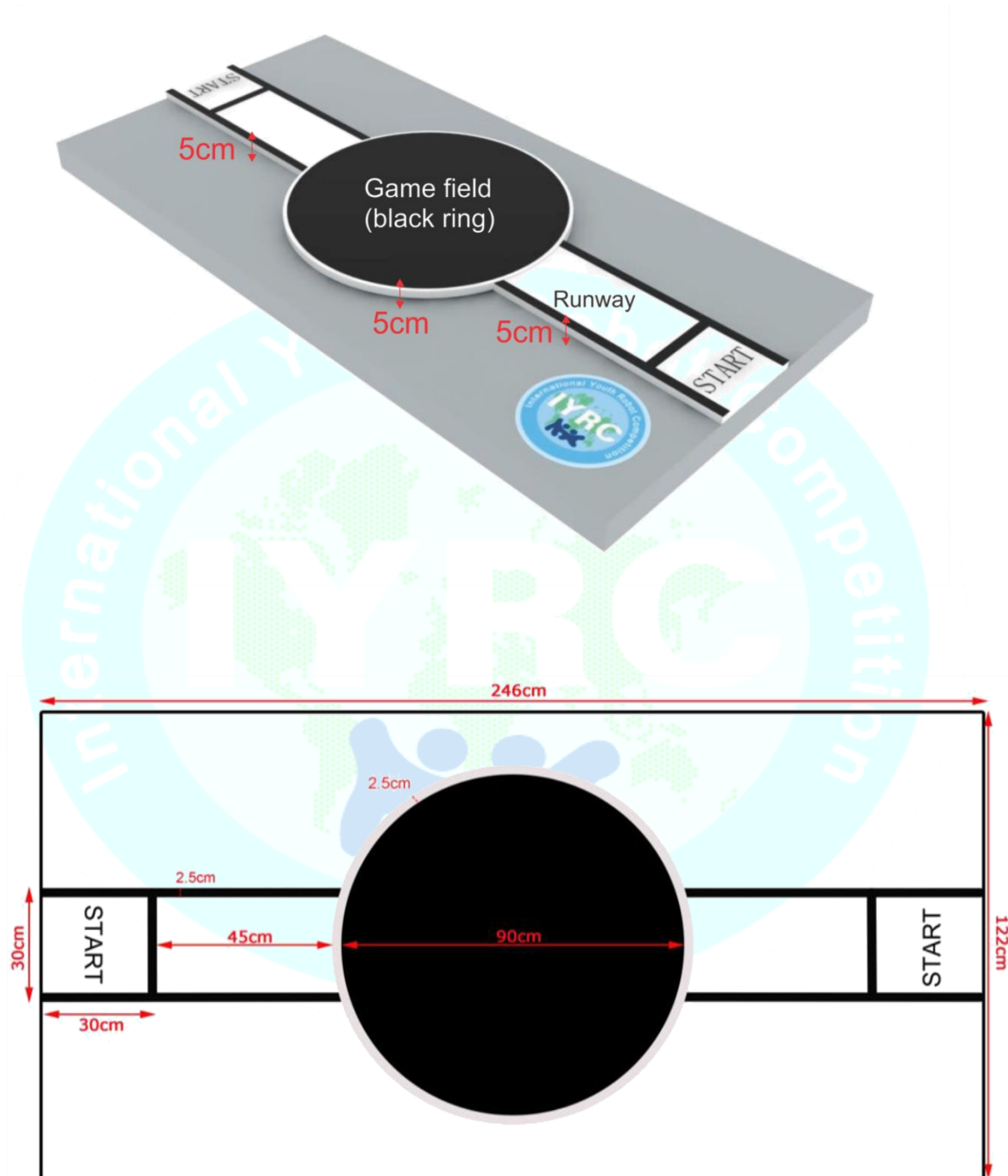
4.0 Game Rules

4.1 Both robots must attempt to cross over to the other half of the opponent side and engage the opponent robot as soon as the match starts. The robot can deploy any tactics or maneuvers, as long as it does not constitutes a foul.
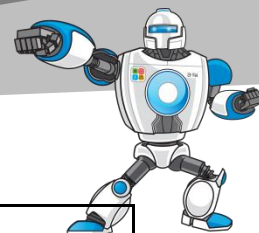
9
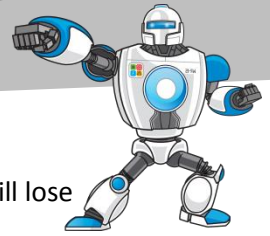
4.2 If robot drop from the runway before reaching the black ring, the participant will lose the current round.

4.3 Within 1 minute, the robot pushed the opponent robot off the playfield (black color ring) first considered wins. Rematch will be carried out when both robots fall off from the playfield.

4.4 In case of the robot's body is out from the playfield (black color ring) more than half or unable to come back into the game field is considered lose.

4.5 Each game is stipulated for **3 minutes** and within 3 minutes total of 3 rounds with each round 1 minute will be given to both sides, if ;

  a.) **Draw** (both robots still moving and stay inside the play field) both scored 1 mark.

  b.) **Win** (Push the opponent outside the play field or the robot not able to move back into the play field) winner score 2 marks.

  c.) **Lose** (Half of the robot's body being push out by opponent to the runway or not able to moveback into play field) loser score 0 mark.

  d.) **Final**   After 3 rounds, if participants get same scores , both of the robot will be placed in back to back position and continue the final round to get the winner.

4.6 Robots MUST be placed behind the start line on the runway before the match starts.

4.7 Robots are to remain stationary until the START whistle has been blown.

4.8 While the match is in progress, at any time the referee whistles, the human operator should stop the robot.

4.9 Fouls

    4.9.1   Not attempting to engage the opponent robot as soon as the match starts.

    4.9.2   Touching the robot while the match is in progress.

    4.9.3   A stalemate of more than 5 seconds.

    4.9.4   Unable to enter the playfield (black color ring) in 10 seconds.

5.0 Game Field

3.) Road Challenge Junior

Age	7-12 years old
Team	Individual
Robot Kits	Kicky Remote kit / Hunarobo / MRT3 only
Mission	Remote control robot to pass through checkpoints and reach end point in shortest time
Robot Building	Pre built remote controlled robot
Game Method	Mission completion and Time record

1.0 Objective

The goal of this game is to test student ability to construct and control a robot to pass through obstacles in shortest time.

2.0 Robot Dimensions and Weight

2.1 The size of the robot at the starting box shall not exceed **25cm (H) by 25cm (W) by 25cm (L).**

3.0 Restrictions on Robot design

3.1 Only Kicky Remote kit / Hunarobo/MRT3 parts are to be used to build the robot. There is no limitation to the amount of blocks used to build the robot. You are allowed to cross use the parts from the above mentioned systems for the robots.

3.2 However, ONLY maximum **2 number of DC motors, and 1 mainboard** are allowed to use for the competition, There is no limit on other electronic parts..

3.3 Robots shall not damage any part of the field or obstacles deliberately.

3.4 Robots are not allowed to have any power supply above **6V DC (Volt of Direct Current)**. VAC (Volt of Alternating Current) power supplies are strictly prohibited for safety reasons.

3.5 Robots shall not cause any danger to the arena & surroundings in anyway whatsoever.

3.6 Robots will need to protect their sensors if necessary from any outside interferences.

3.7 Robots RC receivers will need to be protected from any outside interferences.
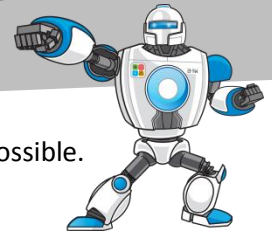
4.0 Game Rules

4.1 Length of a Match

4.1.1   Each game is stipulated for 2 minutes.

4.1.2   In the following cases, a match will end even before 2 minutes.

1）When all checkpoint tasks are achieved.

2）When all checkpoint tasks are not able to accomplish in 2 minutes.

3）In the event of disqualification.

4）When the referees judge that continuation of the match is impossible.

4.2 Building of Robot

4.2.1   Prebuilt.

4.3 Starting the Robot

4.3.1   Whistle will be blown as a sign of start of the match.

4.3.2   Participant is allowed to start (SWITCH ON) the robot using single switch operation.

4.3.3   The participant who remote controls the robot shall keep distance with the game field area without touching or disturbing the game field.
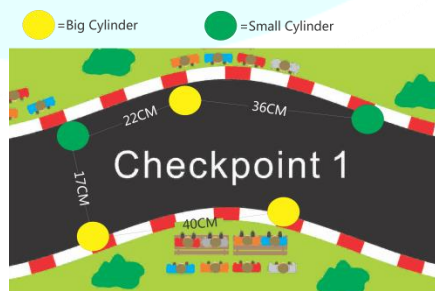
4.4 Competition Tasks

4.4.1   Once the match has begun, each robot shall complete the route by completing all the challenges.

4.4.2   All robots must stop at the END POINT in order for the valid time to be recorded.

4.4.3   Timing will begin when the referee whistles at the Start Point.

4.4.4   All robots will be collected by referees before the competition begin, cannot share the same robot with other participants.

4.4.5   The parts which are fallen or broken from the robots cannot be fixed back onto the robots during the match.

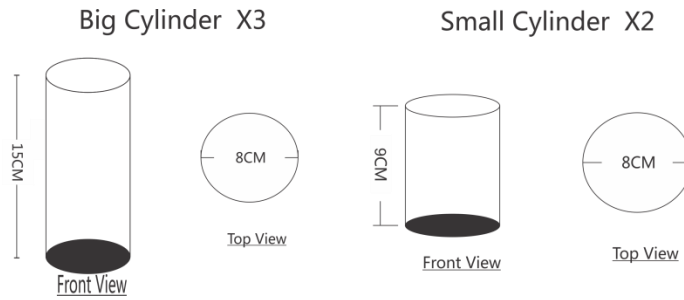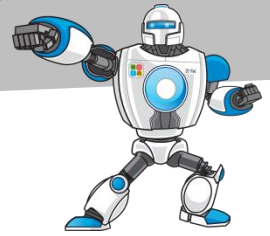4.4.6   Timing will stop once the robot stop at the End Point.

4.5 Deciding the Winner

4.5.1   The winner will be the participant who has scored the highest score when reach the end point. If the participants scored the same points, the winner will be the robot reach the end point with the shortest time.

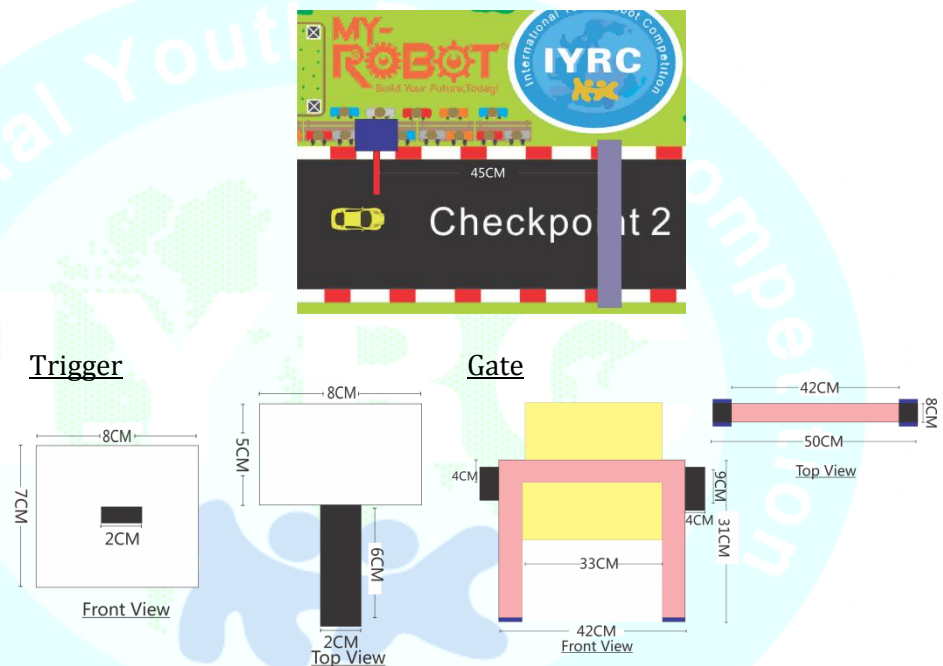4.5.2   There are six checkpoints in total.

Checkpoint 1 : Robot shall past through the cylinder of different size which placed along the path as the obstacles.
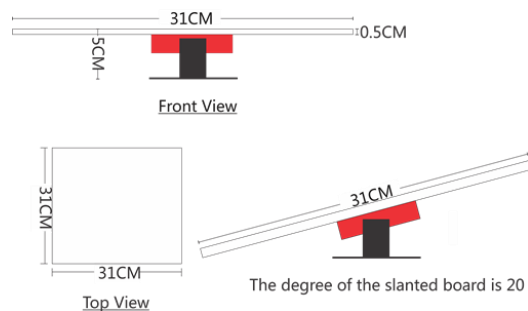
Big Cylinder X3

Small Cylinder X2

15CM

8CM

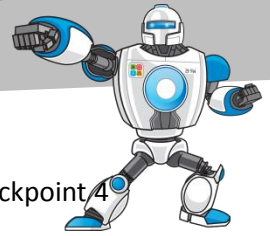Top View

Front View

9CM

8CM

Top View

Front View

Checkpoint 2 : Robot shall move to the gate controller . It needs to push the trigger backward to open the gate. The gate will open and it will close after 10 second. Hence, robot have to pass through the gate before the gate close .

Trigger

Gate

8CM

5CM

7CM

8CM

2CM

Front View

6CM

2CM

Top View

42CM

8CM

50CM

Top View

4CM

9CM

4CM 31CM

33CM

42CM

Front View

Checkpoint 3 : Robot shall pass the see-saw without rollover. If the robot rollover, robot will place back at the checkpoint 3 for retry.

31CM

0.5CM

5CM

Front View

31CM

31CM

31CM

Top View

The degree of the slanted board is 20

14

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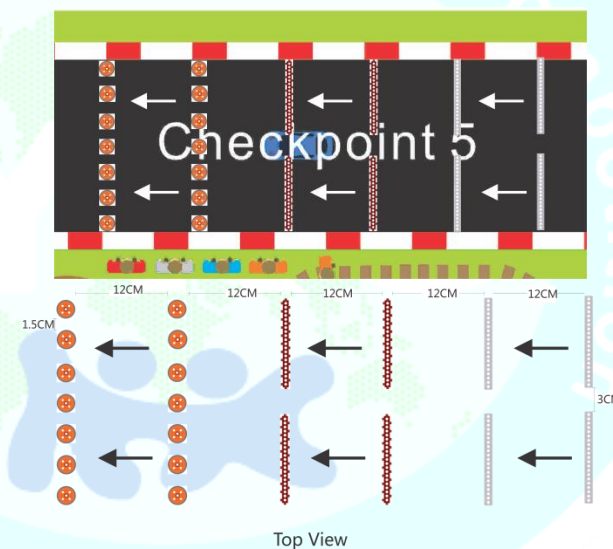
Checkpoint 4 : Robot shall keep pushing the outer board of the checkpoint 4 until the IYRC flag raise to the top of the checkpoint .

Front View
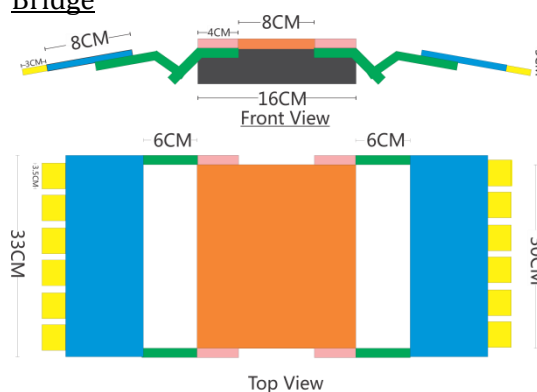
Top View
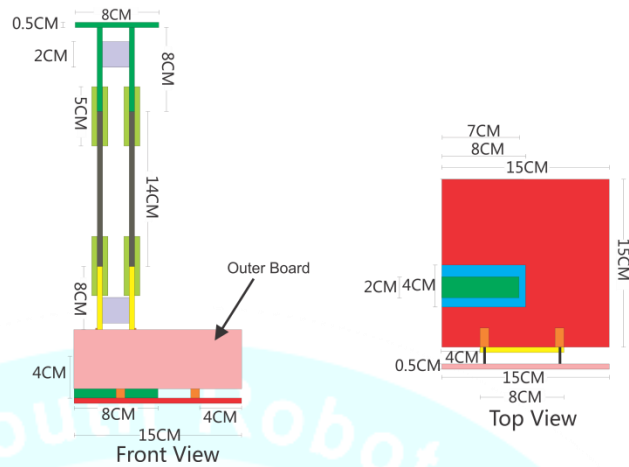
Checkpoint 5 : Robot need to pass all the obstacles placed on the path .

Top View

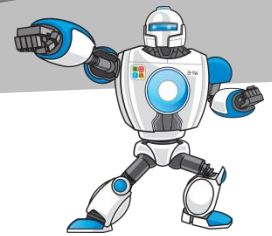Checkpoint 6 : Robot shall push two block into the each gap of the bridge and pass the bridge .

Bridge

Block

Front View

Top View

4.5.3   Each robot will be awarded 20 marks if the robot completed each checkpoint's mission.

4.5.4   The robot will be disqualified if the robot cut through the road. Checkpoint 1 must completed before heading to checkpoint 2 and so on.

4.5.5   All robots are to be operated only using remote controls provided by the referee.

4.5.6   If the robot failed to complete the checkpoint's mission 3 and 6, the robot will be placed at the checkpoint by the judges and only one chance will be given for participants to complete the mission.

4.5.7   No point will be given if the robot constitute a foul even the robot completed each checkpoint's mission

Sample Score record

Name	Check point 1	Check point 2	Check point 3	Check point 4	Check point 5	Check point 6	Total points	Time Taken(Sec)	Ranking
A	20	20	20	20	20	20	120	90	2
B	20	20	0	-	-	-	40	>120	3
C	20	20	20	20	20	20	120	75	1

4.6 Disqualification

A team shall be disqualified if it commits any of the following during the match :

4.6.1   Touching the robot while the match is in progress.

4.6.2   A stalemate of more than 10 seconds.

4.6.3   Robot does not comply with the size restrictions.

4.6.4   Entire robot goes out of the road.

5.0 Game Field

121 CM

487 CM
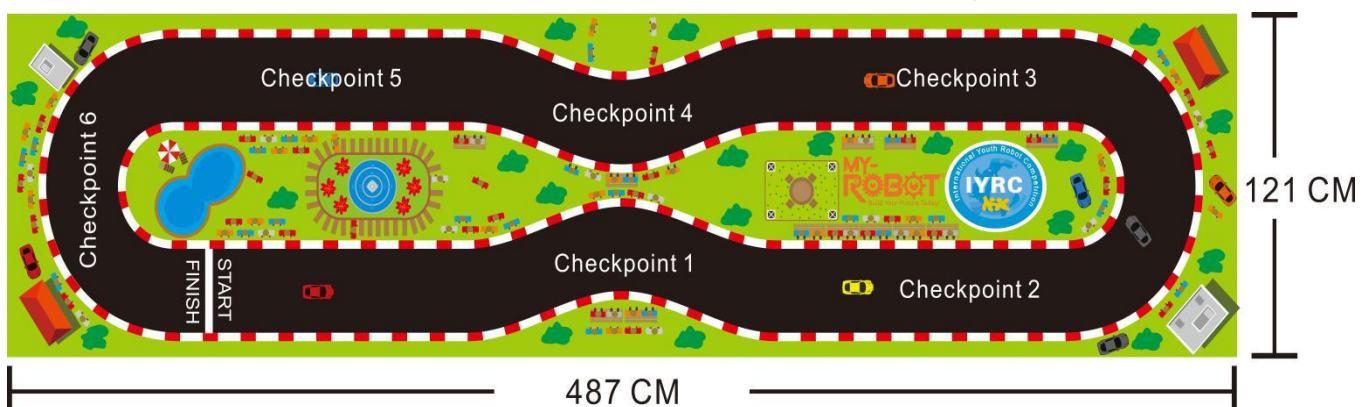
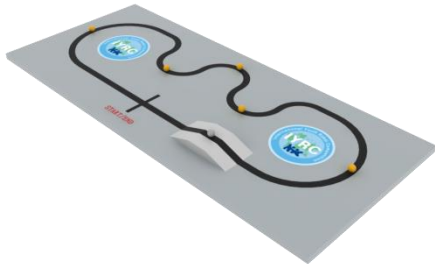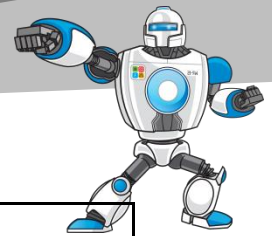| 4.) Coding Mission Junior (Rescue Robot)		
Age	7-12 years old	
Team	Individual	
Robot Kits	Hunarobo / MRT 3 / MRT 5 only	
Mission	Program robot to follow line and rescue all the victims along the route, the robot should stop at the end point together with the victims.	
Robot Building	Prebuilt and automous programmed robot	
Game Method	Mission completion and time record	

1.0 Objective

This game required participant to construct and program a Rescue Robot that will move by tracing the line track and collect the balls (victims) as fast as possible from the dangerous point back to the END point (safety location). The robot is considered completing the task when the robot successfully collects all the balls (Victim) and reaches the finish line.

2.0 Robot Dimensions and Weight

2.1 The size of the robot at the starting box shall not exceed **25cm (H) by 25cm (W) by 25cm (L).** However, robot is **allowed to expand** to any size after the game starts.
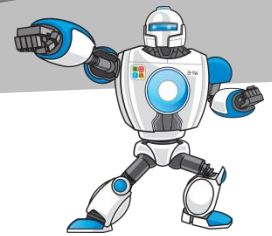
3.0 Restrictions on Robot design

3.1 Only Hunarobo/MRT3/MRT5 parts are to be used to build the robot. There is no limitation to the amount of blocks used to build the robot. You are allowed to cross use the parts from the above mentioned systems for the robots.

3.2 However, ONLY maximum **2 number of DC motors, 2 number of servo motors and 1 mainboard, 5 units of IR sensors** are allowed to use for the competition. There is no limit on other electronic parts.

3.3 You are only allowed to modify the mechanical parts (painting/folding) but not electronic parts. If found guilty, the player would be IMMEDIATELY disqualified.

3.4 Robots shall not damage any part of the field or obstacles deliberately.

3.5 Robots are not allowed to have any power supply above **9V DC (Volt of Direct Current)**. VAC (Volt of Alternating Current) power supplies are strictly prohibited for safety reasons.

3.6 Robots shall not cause any danger to the arena and surroundings in anyway whatsoever.

3.7 Robots will need to protect their sensors if necessary from any outside interferences.

4.0 Game Rules

4.1 Length of a Match

4.1.1 Each match lasts three (3) minutes.

4.1.2 In the following cases, a match will end even before 3 minutes.

1) When the task is achieved.

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2) In the event of disqualification.

3) When the referees judge that continuation of the match is impossible.

4.2 Building of Robot

4.2.1 Prebuilt and programmed.

4.2.2 Each participant is given ONLY three (3) trials to test run and modify or program their robot before the game start.

4.3 Starting the Robot
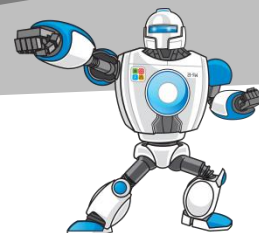
4.3.1 Whistle will be blown as a sign of start of the match.

4.3.2 Participant is allowed to start (SWITCH ON) the robot using single switch operation.

4.3.3 After the switch is 'ON', the robot should move automatically and no communication allowed between the robot and team member (no assistance of remote control or similar) until it crosses the finish line.

4.3.4 The participant who performs the starting operation shall keep distance with the game field area without touching or disturbing the game field.

4.3.5 The teams who are touching or disturbing the game field will be disqualified from that match.

4.4 Competition Tasks

4.4.1 Once the match has begun, each robot shall complete the tasks as below:

• Following the line track.

• Save the victims (six(6) balls (5 orange and 1 white balls)) and bring all the balls to the finish line. There is no limitation on the mechanism on how to collect the ball.

4.4.2 Time is measured from robot crossing the start line by timer.

4.4.3 All robots must stop at the END POINT in order to get 10 points.

4.4.4 Timing will begin when the referee whistles at the Start Point.

4.4.5 All robots will be collected by referees before the competition begin, cannot share the same robot with other participants.

4.4.6 The parts which are fallen or broken from the robots cannot be fixed back onto the robots during the match.

4.4.7 Timing will stop once the robot stop at the End Point and the time taken to complete the route will be recorded.

4.5 Deciding the Winner

4.5.1 Each robot will be given 2 attempts to complete the whole course. The best timing from the 2 attempts will be taken as the final score.

4.5.2 For each orange victim rescued 10 points will be given and white victim rescued 20 points will be given.

4.5.3 The victim shall remain with the robot upon end point in order to get the point if the victim is dropped along the way back to END point, no point will given.

Sample score records

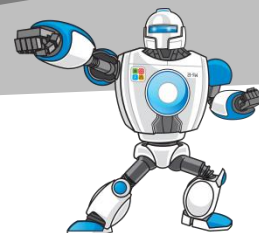| Name	White Victim 1	Orange Victim 1	Orange Victim 2	Orange Victim 3	Orange Victim 4	Orange Victim 5	Robot stop at END point (10 points)	Total points	Time Taken (Second)	Ranking
A	20	10	10	10	0	10	10	70	57	4
B	20	10	10	10	10	0	10	70	48	3
C	20	10	10	0	10	10	10	70	40	2
D	20	10	10	10	10	10	10	80	70	1

4.6 Retries for Robot

4.6.1   In the case of faulty (stop or miss direction) robot movements in the first time during the match at the START point, it is possible to start again (retry) with the referees permission.

4.7 Disqualification

A participant shall be disqualified if it commits any of the following during the match:

4.7.1   A participant touches the robot without referee's approval.

4.7.2   If Robot is unable to move off 5 seconds after whistle blow.

4.7.3   More than 5 IR sensors are used.

4.7.4   Robot does not comply with the size restrictions.

4.7.5   A robot is stopped for more than 10 seconds.

4.7.6   A robot is moved outside of the black line for 10 seconds.

4.7.7   A robot is moved outside of the play field.

4.7.8   The teams who are touching or disturbing the game field will be disqualified from that match.

5.0 Game Field

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SCALE 2:1
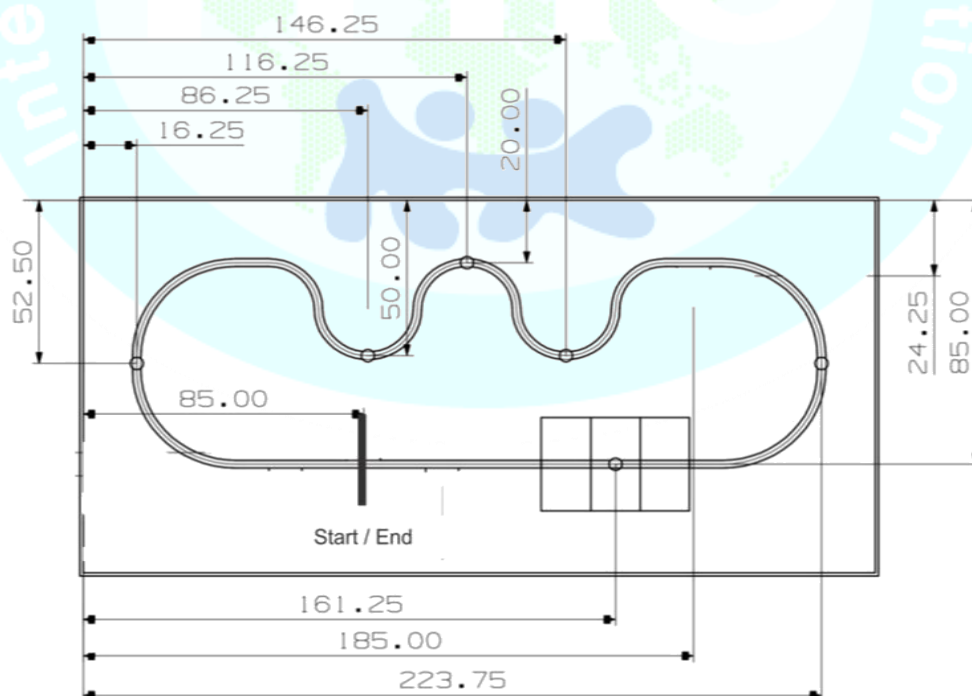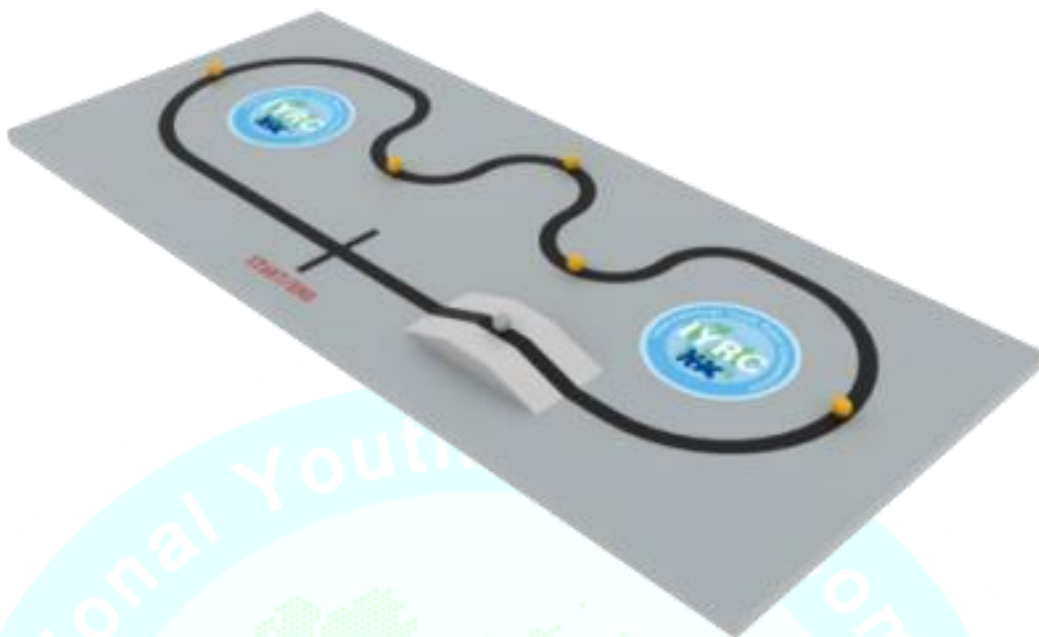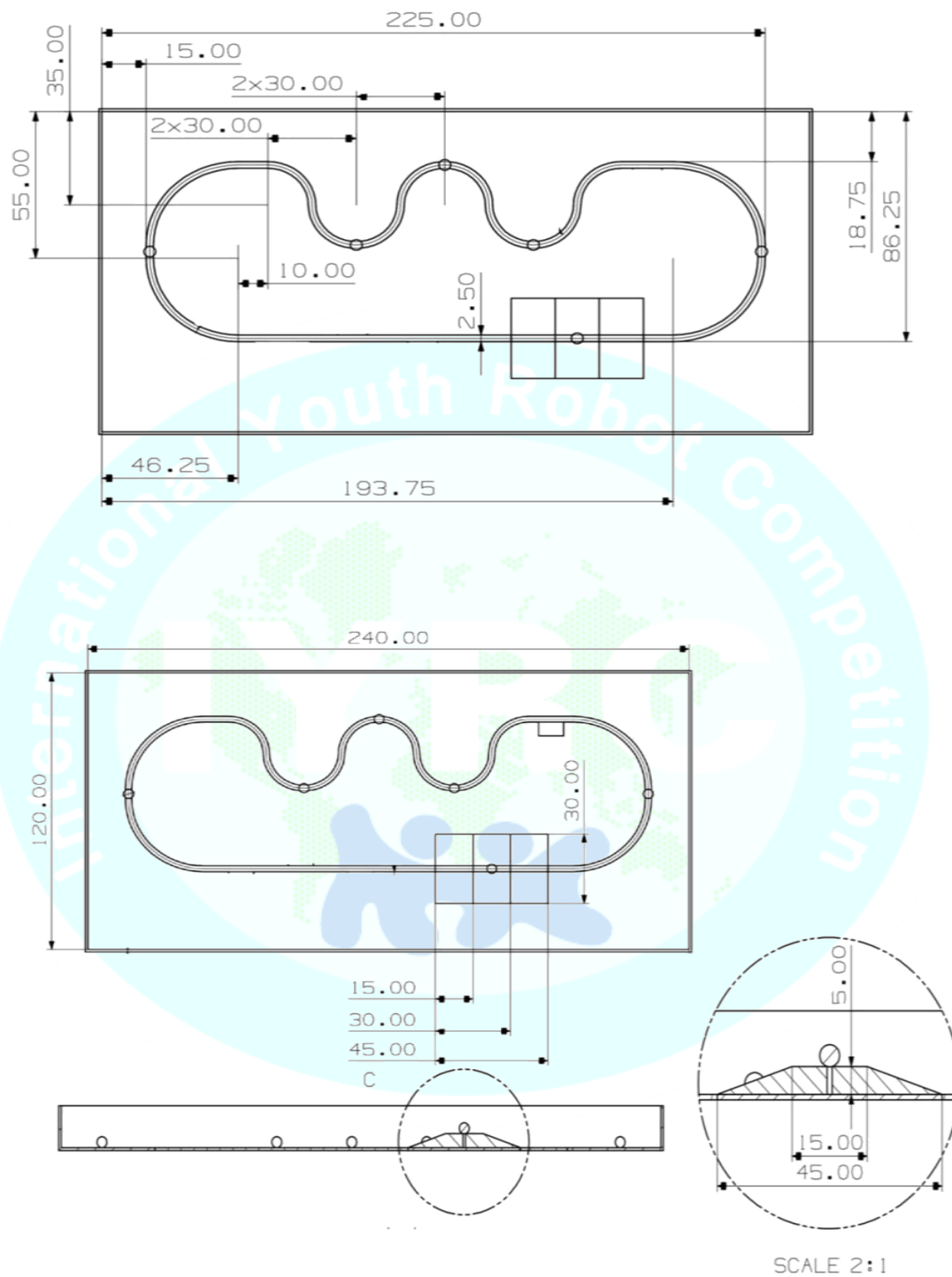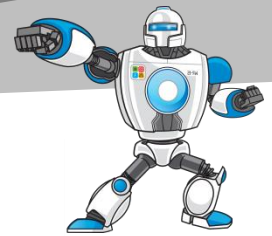
5.) R-Sports Mission (Volleyball Junior)		
Age	7-12 years old	
Team	Team (2 vs 2)	
Robot Kits	Hunarobo / MRT 3 / MRT 5 only	
Mission	Remote control robot to transfer table tennis ball into opponent's field	
Robot Building	Remote Control programmed robot	
Game Method	Tournament	

1.0 Objective

Volleyball Junior is a game that 2 robots work as a team to collect all table tennis balls from their own game field and throw or place on the opponent game field. It is essential to understand own robot fully, dynamics and physical laws about robot, sensor control techniques, and programming in order to construct and program it. This game challenge stu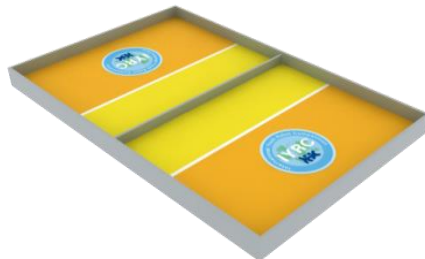dent ability to construct a robot with high stability and controlling skill to throw as much table tennis balls as possible to the opponent's side.

2.0 Robot Dimensions and Weight

2.1 The size of the robot at the starting box shall not exceed **25cm (H) by 25cm (W) by 25cm (L).** However, robot is **allowed to expand to** any size after the game starts.

3.0 Restrictions on Robot design

3.1 Only Hunarobo/MRT3/MRT5 parts are to be used to build the robot. There is no limitation to the amount of blocks used to build the robot. You are allowed to cross use the parts from the above mentioned systems for the robots.

3.2 However, ONLY maximum **2 number of DC motors, 2 number of servo motors and 1 mainboard** are allowed to use for the competition,There is no limit on other electronic parts..

3.3 Robot built is allowed to modify its mechanical parts (painting/folding) but not electronic parts. If found guilty, the player would be IMMEDIATELY disqualified.

3.4 Robots shall not damage any part of the field or obstacles deliberately.

3.5 Robots are not allowed to have any power supply above **9V DC (Volt of Direct Current).** VAC (Volt of Alternating Current) power supplies are strictly prohibited for safety reasons.

3.6 Robots shall not cause any danger to the arena and surroundings in anyway whatsoever.
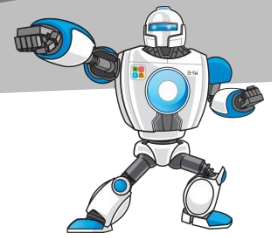
3.7 Robots will need to protect their sensors if necessary from any outside interferences.

3.8 Robots RC receivers will need to be protected from any outside interferences.

4.0 Game Rules

4.1 **Length of a Match**

    4.1.1 Each game is stipulated for 3 minutes.

4.2 Building of Robot

4.2.1   Prebuilt and programmed.

4.3 Starting the Robot

4.3.1   Whistle will be blown as a sign of start of the match.

4.3.2   All robots must place at the 4 corners of the game field before the referee start the game.

4.4 Competition Tasks

4.4.1   All the games will be based on "Knock out" system. All the teams will be distributed in opposing pairs by IYRC committee randomly.

4.4.2   Each team will have 2 students and each student need to control their own robot.

4.4.3   Each team will have 20 table tennis balls in their own field.

4.4.4   Both teams have to grab the ball and transfer the ball into the opponents' field.

4.4.5   If the table tennis ball is thrown outside the field, the ball will be put back into the field immediately by the referee.

4.4.6   In the event of a draw will have 1V1 PK game.

4.4.7   All teams will compete based on a 'knock-out' system with only the winning teams will proceed to the next round of competition.

4.4.8   Upon removal of a robot from the playing field, it can only re-enter the match upon referee's approval.

4.4.9   Robots can deploy any tactics or maneuvers, as long as it does not constitute a foul.

4.4.10   In case of technical problem such as robots are uncontrollable, the referee will pause the match and help participants to turn off and on the robot only. If the robots still cannot function, then the participants will be disqualified.

4.4.11   The parts which are fallen or broken from the robots cannot be fixed back onto the robots during the match.

4.4.12   While the match is in progress, at any time the referee whistles, the participant should stop the robot.

4.4.13   The participant who remote controls the robot shall keep distance with the game field area without touching or disturbing the game field.

4.5 Deciding the Winner

4.5.1   Within 3 minutes, the team who successfully move the most number of balls into opponents' field in the match will be the WINNER.

4.5.2   If one of the team can transfer all of their balls into opponent's field before the given time(3 minutes) during the match, the opponents is considered "SUDDEN DEATH" and lost in the match.
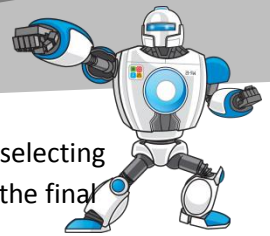
4.5.3　In the event of a DRAW on FULL-TIME, PK Round will be played by selecting one robot from each team to compete in 30 seconds to determine the final result.
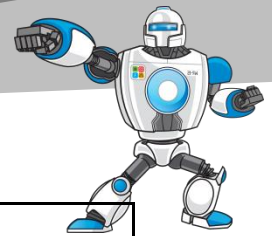
4.6 **Disqualification**.

A team shall be disqualified if it commits any of the following during the match :

4.6.1　Touching the robot while the match is in progress.

4.6.2　Robot does not comply with the size restrictions.

5.0 Game Field
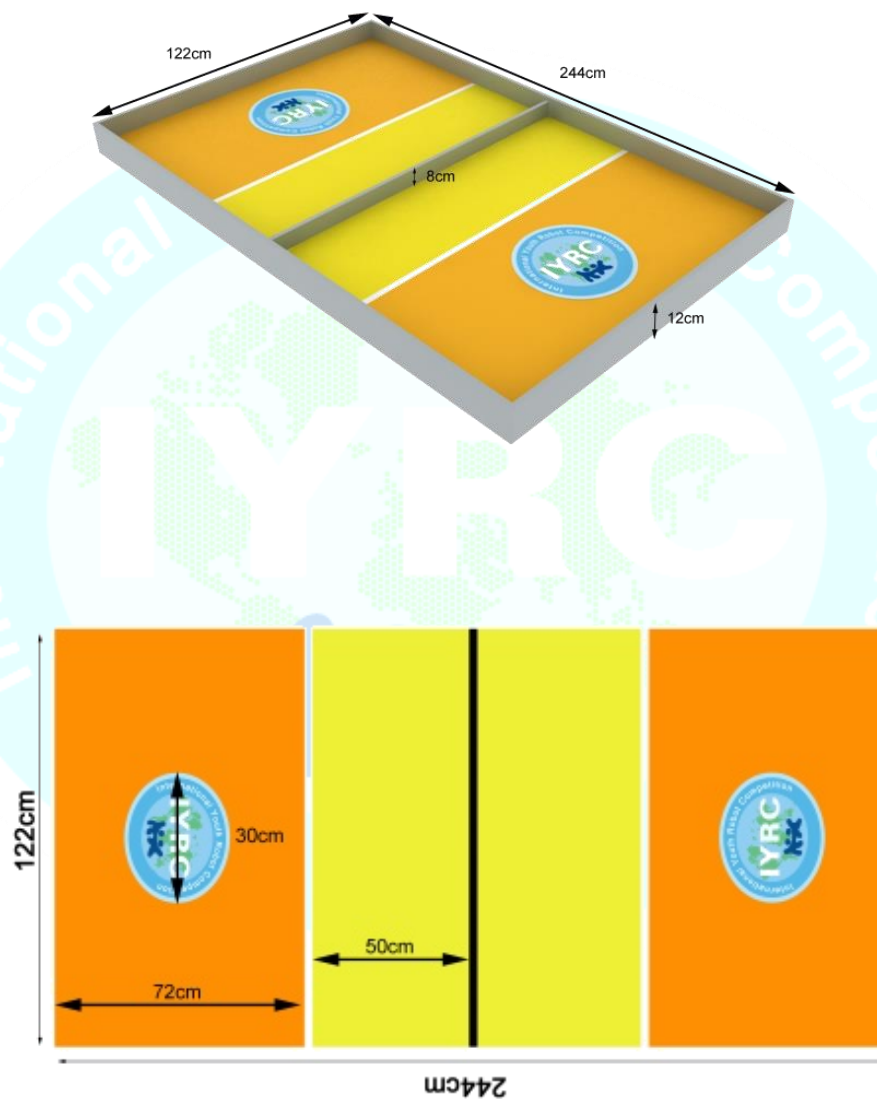
	6.) R-Sports Mission (Soccer)	
Age	7-12 years old	
Team	Team (3 vs 3)	
Robot Kits	Kicky Remote kit / Hunarobo / MRT 3 / MRT 5 only	
Mission	Soccer match using remote control	
Robot Building	Remote Control progammed robot	
Game Method	Tournament	

1.0 Objective

To promote team work and test student ability to construct a robot with high stability and controlling skill to play soccer game.

2.0 Robot Dimensions and Weight

2.1 The size of the robot at the starting box shall not exceed **25cm (H) by 25cm (W) by 25cm (L).** However, robot is **not allowed to expand** to any size after the game starts.

3.0 Restrictions on Robot design

3.1 Only Kicky Remote Kit/ HUNA/MRT3/MRT5 parts are to be used to build the robot. There is no limitation to the amount of blocks used to build the robot. You are allowed to cross use the parts from the above mentioned systems for the robots.

3.2 However, ONLY maximum **2 number of DC motors, 2 number of servo motors and 1 mainboard** are allowed to use for the competition,There is no limit on other electronic parts.

3.3 Robot built is allowed to modify its allowed to modify the mechanical parts (painting/folding) but not electronic parts. If found guilty, the player would be IMMEDIATELY disqualified.

3.4 Robots shall not damage any part of the field or obstacles deliberately.

3.5 Robots are not allowed to have any power supply above **9V DC**(Volt of Direct Current). VAC (Volt of Alternating Current) power supplies are strictly prohibited for safety reasons.

3.6 Robots shall not cause any danger to the arena and surroundings in anyway whatsoever.

3.7 Robots RC receivers will need to be protected from any outside interferences

3.8 Robot cannot be design in a closed structure to handle the ball. The judge will check the robot structure before the competition begin.

4.0 Game Rules

4.1 Length of a Match

4.1.1 Each game is stipulated for 3 minutes.

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4.2 Building of Robot

    4.2.1   Prebuilt and programmed

4.3 Starting the Robot

    4.3.1   Whistle will be blown as a sign of start of the match.

    4.3.2   The participant who remote controls the robot shall keep distance with the game field area without touching or disturbing the game field.

4.4 Competition Tasks

    4.4.1   All the games will be based on **"<u>knock out</u>"** system. All the teams will be distributed in opposing pairs by IYRC committee randomly.

    4.4.2   Each team shall consist of 3 robots and 3 students with each student controlling one robot. Teams can choose between two roles variants: 1 defender + 2 strikers or 2 defenders + 1 striker.

- **Defender**
  - cannot leave his area (his half of the field), therefore cannot enter opponents area.
  - allowed to enter own penalty area with non stop movement to protect the gate, but not more than 10 seconds
- **Striker**
  - allowed to enter both own and opponent's area
  - allowed to enter opponent's penalty area to hit the gates, but stay there not more than 10 seconds.

    4.4.3   During the match, the participants who control their robot please keep distance with game field, and don't touch or damage the field.

    4.4.4   The team should distribute the roles prior the game and provide this information to referee. Roles cannot be changed during the match, but can be changed between the matches.

    4.4.5   A robot not allowed to handle the ball for more than 5 seconds.Participant will receive a yellow card if handle the ball more than 5 seconds.

    4.4.6   Upon removal of a robot from the playing field, it can only re-enter the game upon referee's approval.

    4.4.7   Robots can deploy any tactics or maneuvers, as long as it does not constitute a foul.

    4.4.8   The striker and the defender robot can only stay within the penalty area for a maximum of 10 seconds.Participant will receive a yellow card if the striker or defender stays within the penalty area more than 10 second.

    4.4.9   An offender will be issued a yellow card. Upon receiving 2 yellow card, the player will be removed and being isolated for 1 minute before it can reenter the game field.

    4.4.10   Extra time of 1 minute shall be played only in the event of a draw.
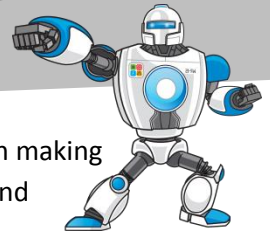
4.4.11 Penalties ball will be placed on a certain point (white dot). Robot which making a shot should start its movement behind the white dot to hit the ball and cannot push the ball exceed the white line.

4.4.12 All robots will be collected by referees before the competition begin, cannot share the same robot with other participants.

4.4.13 The parts which are fallen or broken from the robots cannot be fixed back onto the robots during the match.

4.4.14 While the match is in progress, at any time the referee whistles, the participants should stop the robot.

4.4.15 During the match, if both defender and striker enter into opponent's area, even if score a goal but the goal is not valid.

4.5 Deciding the Winner

4.5.1 Within 3 minutes, the team with highest goals will be the winner.

4.5.2 The 'knock-out' stage shall not consist of any points and the winner of the game shall proceed to the next round.

4.5.3 The time limit for extra time shall be 1 minute.

4.5.4 In the event of a DRAW by the end of extra time, a penalty shoot-out shall decide the match with each team being allocated 3 penalties.

4.5.5 'Sudden death' penalties shall decide the match in the event both teams are still tied for score. The team that misses the first penalty with the other team scoring their penalty, losses the game.
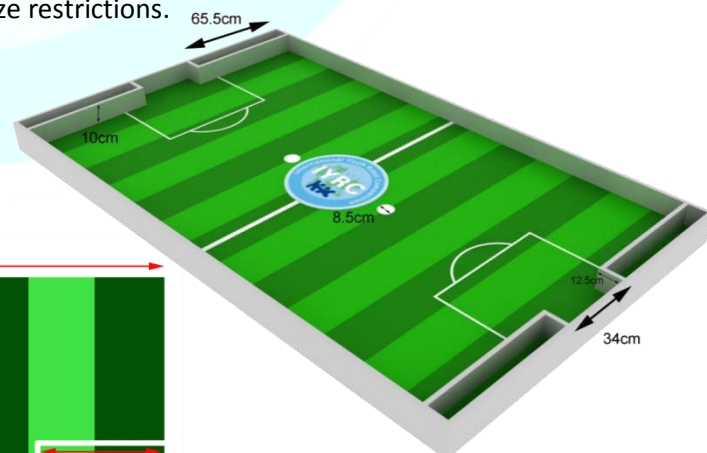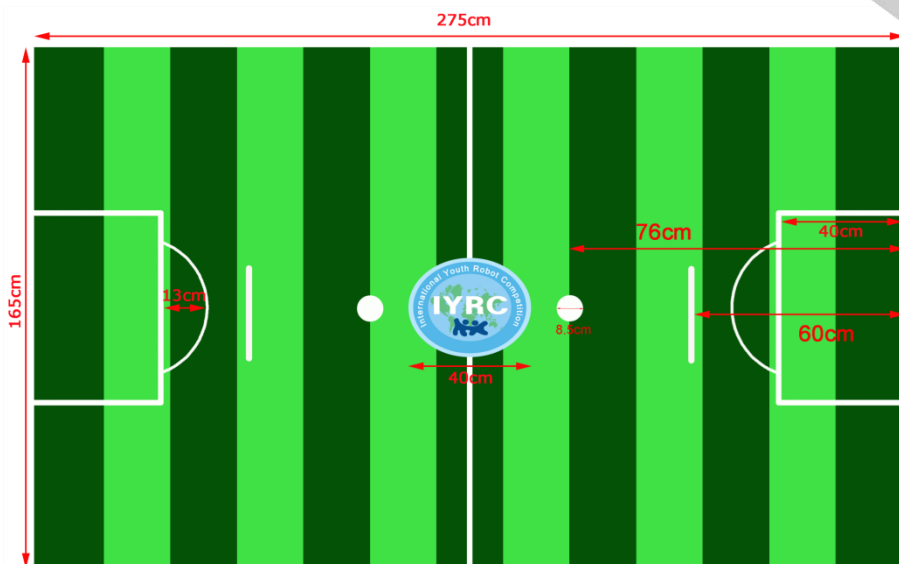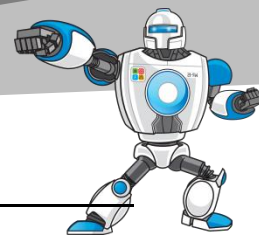
4.6 Disqualification

A team shall be disqualified if it commits any of the following during the match:

4.6.1 Touching the robots while the match is in progress.

4.6.2 Robot does not comply with the size restrictions.

5.0 Game Field

7.) Creative Design Junior

Age	7-12 years old
Team	Team (3-5 students)
Robot Kits	MRT series of products
Mission	Create a robot expressing the given theme
Robot Building	Pre Built
Game Method	Presentation and evaluation by panel

1.0 Objective

Provide a platform for student to showcase their creativity, innovative and programming skills. They are required to work together as a team to design a robot based on the given theme. Besides, they will also need to present and demonstrate their robot creation well to convince and impress the judges.

2.0 Robot Dimensions and Weight

2.1 The size and weight of the robot is not limited.

3.0 Restrictions on Robot design

3.1 Only MRT series of products are to be used to build the robot. There is no limitation to the amount of blocks used to build the robot. You are allowed to cross use the parts from the above mentioned systems for the robots.

3.2 Robots shall not damage any part of the field or obstacles deliberately.

3.3 VAC (Volt of Alternating Current) power supplies are strictly prohibited for safety reasons.

3.4 Robots shall not cause any danger to the arena & surroundings in anyway whatsoever.

3.5 Robots will need to protect their sensors if necessary from any outside interferences.

3.6 Robots RC receivers will need to be protected from any outside interferences

4.0 Game Rules

4.1 Length of a Match

4.1.1 Participants shall build a robot in advance.

4.1.2 Participants are given 2 hours duration to prepare their robot.

4.1.3 Each group has presentation time of 3 minutes to introduce their robots to the referee on the stage. Presentation can be done in English. If they are unable to present in English language they have to prepare their own translator.

4.2 Theme : Service robot / Service robot system

The robot built can help human carry out task and make human life easier. The service robot can be based on one of the following field ONLY:

1) Food and Beverage

2) Household

3) Agriculture
4) Medical
5) Transportation
6) Shopping

4.3 Robot Manual

4.3.1 Participants should submit the robot manual (in A4 size booklet) and the related material such as poster, photos to the organizer before the presentation.

4.3.2 The manual must be in English.

4.3.3 The manual should consist of
1) Robot Name
2) Team member and the task allocation
3) Introduction of the project
4) Characteristic of robot
5) Functionality of robot

4.4 Deciding the Winner

4.4.1 There will have first round to eliminate group that does not meet requirement before the judge give mark on the robot.

4.4.2 Participants must have one robot manual in English version and their robot must be able to function. If the participants do not fulfill the requirements in the first round, they will be disqualified from the final round.

4.4.3 Score shall consist of :

1) Relevance to theme
2) Creativity
3) Uniqueness
4) Robot Functionality
5) Team work
6) Robot manual
7) Presentation skill

Sample Score Record

	Relevance to theme	Creativity	Uniqueness	Robot Functionality	Robot manual	Team work	Presentation skill	Total score	
Name	10	15	15	10	10	10	30	100	**Ranking**
A	8	7	6	9	9	15	20	74	2
B	8	8	7	9	8	10	25	81	1
C	9	5	7	2	6	19	10	58	3

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SENIOR

(Age:13–17)

Categories
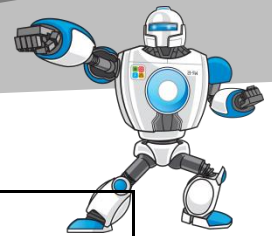
1. **Push-Push Senior**
2. **Coding Mission Senior (Fire Fighter)**
3. **R-Sports Mission (Volleyball Senior)**
4. **Creative Design Senior**

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1.) Push-Push Senior

Age	13-17 years old
Team	Individual
Robot Kits	Hunarobo / MRT 3 / MRT 5 only
Mission	Program autonomous robot to pass through the runway and push opponent outside of the ring
Robot Building	Autonomous programmed robot
Game Method	Tournament

1.0 Objective

Push-push Senior is a game that test and challenge the participant's ability to construct and programmed an autonomous robot to pass through the runway and push opponent out of the game field (black colour ring) .

2.0 Robot Dimensions and Weight

2.1 The size of the robot at the starting box shall not exceed **20cm (H) by 20cm (W) by 20cm (L).** However, robots **are allowed to expand to** any size after the game starts.

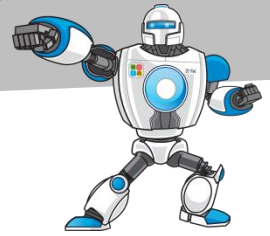2.2 The maximum weight of the robot is **700 grams (Include batteries).**

3.0 Restrictions on Robot design

3.1 Only HUNA/MRT3/MRT5 parts are to be used to build the robot. There is no limitation to the amount of blocks used to build the robot. You are allowed to cross use the parts from the above mentioned systems for the robots.

3.2 However, ONLY maximum **2 number of DC motors, 2 number of servo motors, 2 units of IR sensors and 1 mainboard** are allowed to use for the competition,There is no limit on other electronic parts.

3.3 Robot built is allowed to modify the mechanical parts (painting/folding) but not electronic parts. If found guilty, the player would be IMMEDIATELY disqualified.

3.4 Robots shall not damage any part of the field or obstacles deliberately.

3.5 Robots are not allowed to have any power supply above **9V DC (Volt of Direct Current).** VAC (Volt of Alternating Current) power supplies are strictly prohibited for safety reasons.

3.6 Robots shall not cause any danger to the arena and surroundings in anyway whatsoever.

3.7 Robots will need to protect their sensors if necessary from any outside interferences.

4.0 Game Rules

4.1 Length of a Match

4.1.1 Each game is stipulated for 3 minutes.

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4.2 Building of Robot

    4.2.1   Prebuilt and programmed.

4.3 Starting the Robot

    4.3.1   Whistle will be blown as a sign of start of the match.

4.4 Competition Tasks

    4.4.1   All the games will be based on **"knock out"** system. All the participants will be distributed in opposing pairs by IYRC committee randomly.

    4.4.2   Both robots must attempt to cross over to the other half of the opponent side and engage the opponent robot as soon as the match starts. The robot can deploy any tactics or maneuvers, as long as it does not constitutes a foul.

    4.4.3   Within 60 seconds, the robot pushed the opponent robot off the playfield first considered wins. Rematch will be carried out when both robots fall off from the playfield.

    4.4.4   In case of the robot's body is out from the game field more than half or unable to return back into the game field, it is considered as lose.

    4.4.5   Robots MUST be placed behind the start line on the runway before the match starts.

    4.4.6   Robots are to remain stationary until the START whistle has been blown.
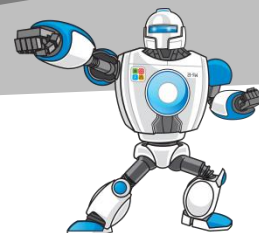
4.5 Deciding the Winner

    4.5.1   Each game is stipulated for **3 minutes** and within 3 minutes total of 3 rounds with each round 1 minute will be given to both sides, if ;

        a.) **Draw** (both robots still moving and stay inside the play field) both scored 1 mark.

        b.) **Win** (Push the opponent outside the play field or the robot not able to move back into the play field) winner score 2 marks.

        c.) **Lose** (Half of the robot's body being push out by opponent to the runway or not able to moveback into play field) loser score 0 mark.

        d.) **Final** After 3 rounds, if participants get same scores, both of the robot will be placed in back to back position and continue the final round to get the winner.

4.6 Disqualification

A team shall be disqualified if it commits any of the following during the match:

    4.6.1   Robot does not comply with the size restrictions.

    4.6.2   Not attempting to engage the opponent robot as soon as the match starts.

    4.6.3   Touching the robot while the match is in progress.

    4.6.4   A stalemate of more than 5 seconds.

    4.6.5   Unable to enter the playfield (black colour ring) in 10 seconds.

5.0 Game Field
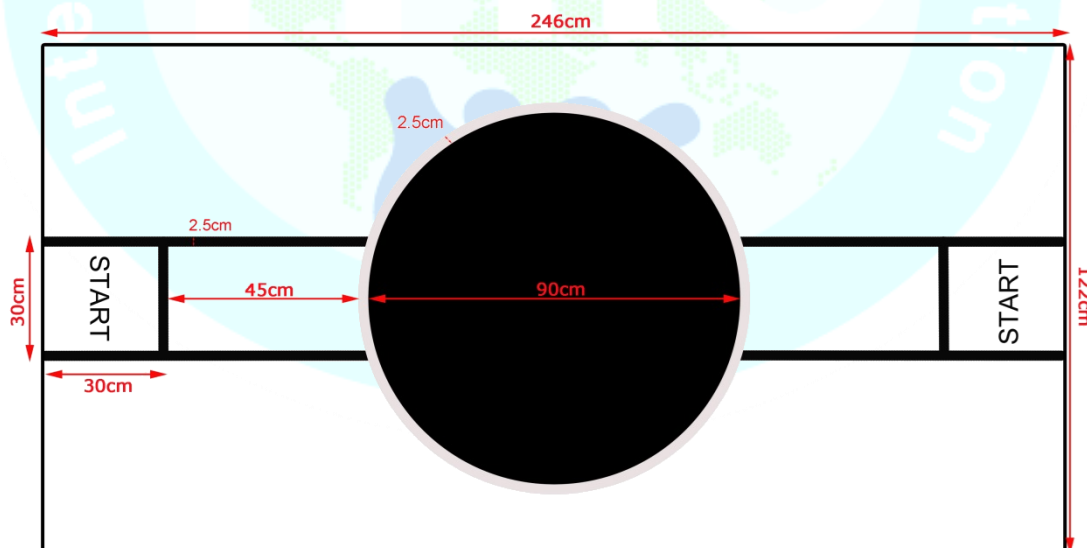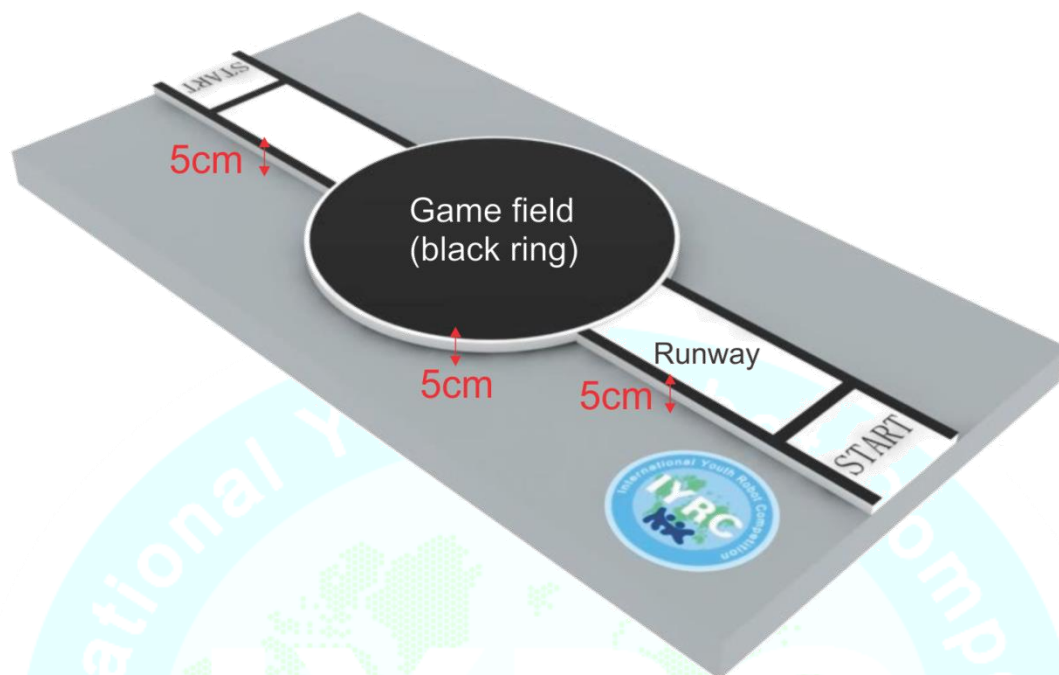
2.) Coding Mission Senior (Fire Fighter)

Age	13-17 years old
Team	Individual
Robot Kits	Hunarobo / MRT 3 / MRT 5 only
Mission	Program line tracing robot that make correct decision s at junctions to find shortest route and knock down all the pins.
Robot Building	Pre-built autonomous programmed robot
Game Method	Mission completion and Time record

1.0 Objective

This game required participant to construct and program a Fire Fighter Robot that will move by following the line track and make decision at each of the junctions to reach the fire area to extinguish all the fire(push over the cylinder block). The robot is considered completing the task when the robot successfully extinguishes all the fire and reaches the END point.
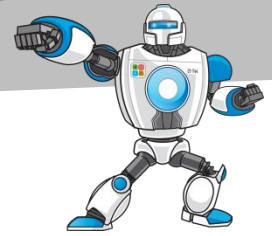
2.0 Robot Dimensions and Weight

2.1 The size of the robot at the starting box shall not exceed **25cm (H) by 25cm (W) by 25cm (L).**

2.2 Each robot must fully comply with size restriction, even after all the appendages have been fully expanded.

3.0 Restrictions on Robot design

3.1 Only Hunarobo /MRT3 /MRT5 parts are to be used to build the robot. There is no limitation to the amount of blocks used to build the robot. You are allowed to cross use the parts from the above mentioned systems for the robots.

3.2 However, ONLY maximum **2 number of DC motors,2 number of servo motors and 1 mainboard, 5 units of IR Sensor** are allowed to use for the competition,There is no limit on other electronic parts.

3.3 Robot built is allowed to modify the mechanical parts (painting/folding) but not electronic parts. If found guilty, the player would be IMMEDIATELY disqualified.

3.4 Robots shall not damage any part of the field or obstacles deliberately.

3.5 Robots are not allowed to have any power supply above **9V DC (Volt of Direct Current).** VAC (Volt of Alternating Current) power supplies are strictly prohibited for safety reasons.

3.6 Robots shall not cause any danger to the arena and surroundings in anyway whatsoever.

3.7 Robots will need to protect their sensors if necessary from any outside interferences.

4.0 Game Rules

4.1 Length of a Match

4.1.1   Each game is stipulated for 3 minutes.

4.1.2   In the following cases, a match will end even before 3 minutes.

    1)   When the task is achieved and robot stop at the END point.

    2)   In the event of disqualification.

    3)   When the referees judge that continuation of the match is impossible.

4.2 Building of Robot

4.2.1   Prebuilt and programmed.

4.2.2   Each participant is given ONLY three (3) trials to test run and modify or program their robot before the game start.

4.3 Starting the Robot

4.3.1   Whistle will be blown as a sign of start of the match.

4.3.2   Participant is allowed to start (SWITCH ON) the robot using single switch operation.

4.3.3   After the switch is 'ON', the robot should move automatically and no communication allowed between the robot and team member (no assistance of remote control or similar) until it crosses the finish line.

4.3.4   The participant who performs the starting operation shall keep distance with the game field area without touching or disturbing the game field.

4.3.5   The participant who are touching or disturbing the game field will be disqualified from that match.

4.4 Competition Tasks

4.4.1   Once the match has begun, each robot shall complete the tasks as below:

- Following the line track.
- Make decision at each junction to complete the task.
- Extinguish all the fire (cylinder) by knocking down the cylinder block s using any parts of the robot.

4.4.2   All robots MUST stop at the END POINT in order to get 10 points.

4.4.3   Timing will begin when the referee whistles at the Start Point.

4.4.4   All robots will be collected by referees before the competition begin, cannot share the same robot with other participants.

4.4.5   Timing will stop once the robot stop at the End Point and the time taken to complete the route will be recorded.

4.4.6   Robots can deploy any tactics as long as it does not constitute a foul.

4.4.7   The parts which are fallen or broken from the robots cannot be fixed back onto the robots during the match.

4.5 Deciding the Winner

4.5.1   Each robot will be given 2 attempts to complete the whole course. The best timing from the 2 attempts will be taken as the final score.
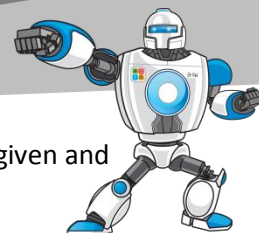
4.5.2   For each fire (yellow cylinder block) extinguished 10 points will be given and each fire (blue cylinder) extinguished 20 points will be awarded.

Sample score records

Name	Number of yellow cylinder knocked down (10 points each)	Point scored	Blue cylinder Knocked down (20 points)	Robot stop at END point (10 points)	Total points	Time Taken (Second)	Ranking
A	5	50	20	10	80	70	1
B	4	40	20	10	70	66	3
C	4	40	20	10	70	63	2
D	3	30	20	10	60	60	4

4.6 Retries for Robot

4.6.1   In the case of faulty (stop or miss direction) robot movements in the first time during the match at the START point, it is possible to start again (retry) with the referees permission.

4.7 Disqualification.

A team shall be disqualified if it commits any of the following during the match :

4.7.1   A participant touches the robot without referee's approval.
4.7.2   If Robot is unable to move off 5 seconds after whistle blow.
4.7.3   More than 5 IR sensors are used.
4.7.4   Robot does not comply with the size restrictions.
4.7.5   A robot is stopped for more than 10 seconds.
4.7.6   A robot is moved outside of the black line for 10 seconds.
4.7.7   A robot is moved outside of the play field.

5.0 Game Field

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3.) R-Sports Mission (Volleyball Senior)

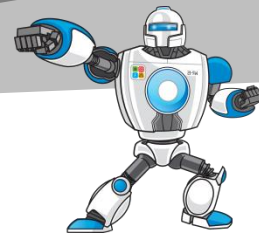|	
Age	13-17 years old
Team	Team (2 vs 2)
Robot Kits	Hunarobo / MRT 3 / MRT 5 only
Mission	Remote control robot to transfer table tennis ball into opponent's field
Robot Building	Remote Control progammed robot
Game Method	Tournament

1.0 Objective

Volleyball Senior is a game that 2 robots work as a team to collect all table tennis balls from two towers from their own game field and throw or place on the opponent game field. It is essential to understand own robot fully, dynamics and physical laws about robot, sensor control techniques, and programming in order to construct and program it. This game test student ability to construct a robot with high stability and controlling skill to throw as much table tennis ball as possible to the opponent's side.

2.0 Robot Dimensions and Weight

    2.1 The size of the robot at the starting box shall not exceed **25cm (H) by 25cm (W) by 25cm (L).** However, robots **are allowed to expand to** any size after the game starts.

    2.2 Each robot must fully comply with the size restriction.

3.0 Restrictions on Robot design

    3.1 Only HUNAROBO /MRT3/MRT5 parts are to be used to build the robot. There is no limitation to the amount of blocks used to build the robot. You are allowed to cross use the parts from the above mentioned systems for the robots.

    3.2 However, ONLY maximum **2 number of DC motors,2 number of servo motors and 1 mainboard** are allowed to use for the competition, there is no limit on other electronic parts..

    3.3 Robot built is allowed to modify the mechanical parts (painting/folding) but not electronic parts. If found guilty, the player would be IMMEDIATELY disqualified.

    3.4 Robots shall not damage any part of the field or obstacles deliberately.

    3.5 Robots are not allowed to have any power supply above **9V DC (Volt of Direct Current).** VAC (Volt of Alternating Current) power supplies are strictly prohibited for safety reasons.

    3.6 Robots shall not cause any danger to the arena & surroundings in anyway whatsoever.

    3.7 Robots will need to protect their sensors if necessary from any outside interferences.

    3.8 Robots RC receivers will need to be protected from any outside interferences.

4.0 Game Rules

4.1 Length of a Match

4.1.1   Each game is stipulated for 3 minutes.

4.2 Building of Robot

4.2.1   Prebuilt and programmed robot.

4.3 Starting the Robot

4.3.1   Whistle will be blown as a sign of start of the match.

4.3.2   All robots must place at the 4 corners of the game field before the referee start the game.

4.4 Competition Tasks

4.4.1   All the games will be based on "Knock out" system. All the teams will be distributed in opposing pairs by IYRC committee randomly.

4.4.2   Each team will have 2 students and each student need to control their own robot.

4.4.3   Each team will have 20 table tennis balls placed on top of two different height towers in their own field.

4.4.4   Each team can deploy any tactics or maneuvers to grab or collect the table tennis balls from the tower and transfer them into the opponents' field.

4.4.5   If the table tennis ball is thrown outside the field, the ball will be put back on the lower tower immediately by the referee.

4.4.6   In the event of a draw will have 1V1 PK game.

4.4.7   All teams will compete based on a 'knock-out' system with only the winning teams will proceed to the next round of competition.

4.4.8   Upon removal of a robot from the playing pitch, it can only re-enter the match upon referee's approval.

4.4.9   In case of technical problem such as robots are uncontrollable, the referee will pause the match and help participants to turn off and on the robot only. If the robots still cannot function, then the participants will be disqualified.

4.4.10   The parts which are fallen or broken from the robots cannot be fixed back onto the robots during the match.

4.4.11   While the match is in progress, at any time the referee whistles, the human operator should stop the robot.

4.5 Deciding the Winner

4.5.1   Within 3 minutes, the team who successfully move the most number of balls into opponents' field in the match will be the WINNER.

4.5.2   If one of the team can transfer all of their balls into opponent's field during the match before 3 minutes of time limit, the opponent is considered "SUDDEN DEATH" and lost in the match.
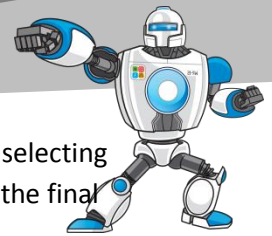
4.5.3   In the event of a DRAW on FULL-TIME, PK Round will be played by selecting one robot from each team to compete in 30 seconds to determine the final result.
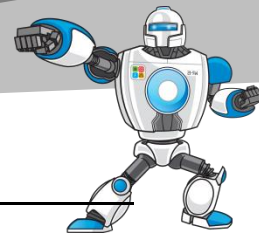
4.6 Disqualification.
A team shall be disqualified if it commits any of the following during the match:
  4.6.1   Touching the robot while the match is in progress.
  4.6.2   Robot does not comply with the size restrictions.

5.0 Game Field
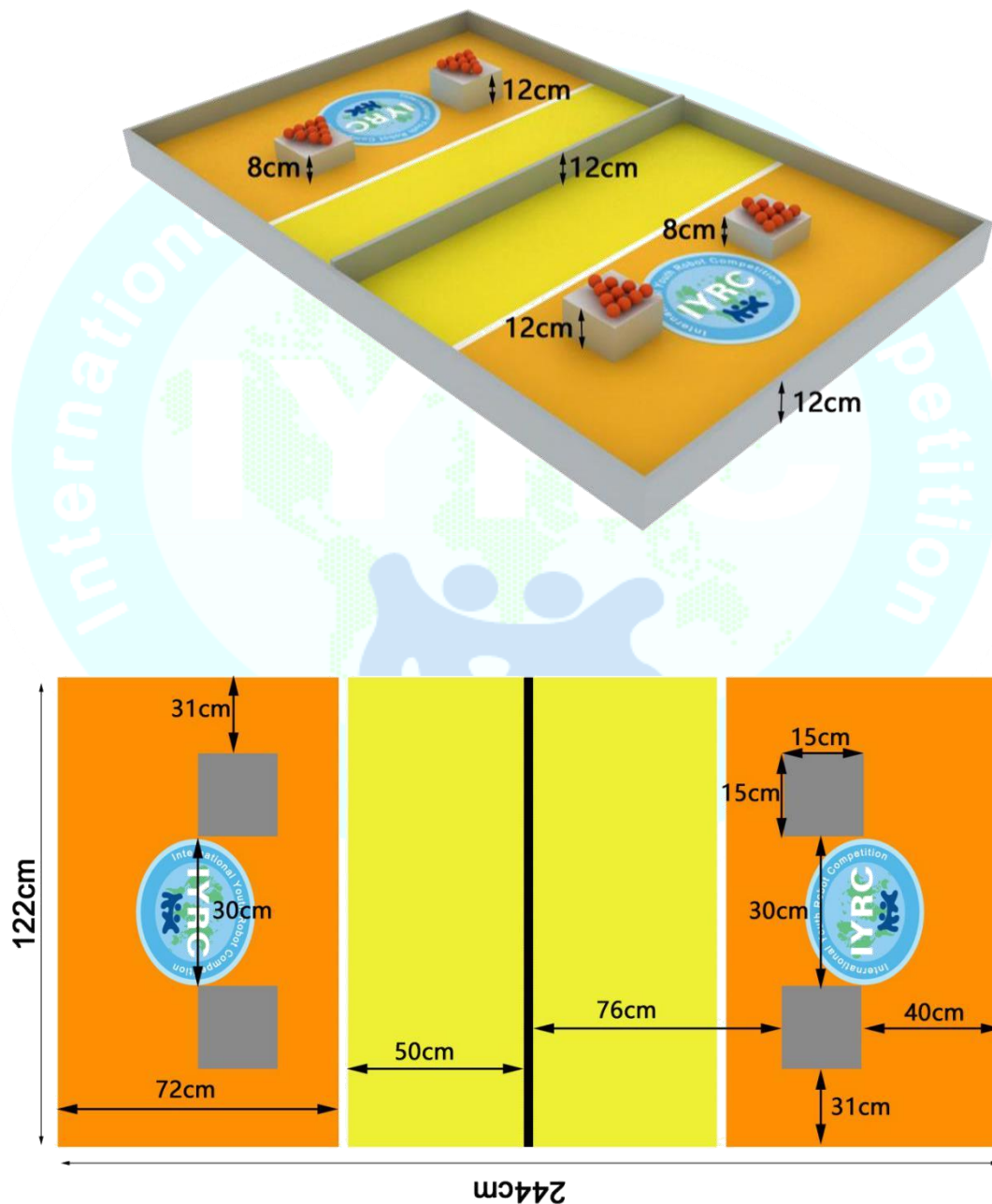
4.) Creative Design Senior

Age	13-17 years old
Team	Team (3-5 students)
Robot Kits	MRT series of products
Mission	Create a robot expressing the given theme
Robot Building	Pre Built
Game Method	Presentation and evaluation by panel

1.0 Objective

Provide a platform for student to showcase their creativity, innovative and programming skills. They are required to work together as a team to design a robot based on the given theme. Besides, they will also need to present and demonstrate their robot creation well to convince and impress the judges.

2.0 Robot Dimensions and Weight

2.1 The size and weight of the robot is not limited.

3.0 Restrictions on Robot design

3.1 Only MRT series of products   are to be used to build the robot. There is no limitation to the amount of blocks used to build the robot. You are allowed to cross use the parts from the above mentioned systems for the robots.

3.2 Robots shall not damage any part of the field or obstacles deliberately.

3.3 VAC (Volt of Alternating Current) power supplies are strictly prohibited for safety reasons.

3.4 Robots shall not cause any danger to the arena & surroundings in anyway whatsoever.

3.5 Robots will need to protect their sensors if necessary from any outside interferences.

3.6 Robots RC receivers will need to be protected from any outside interferences

4.0 Game Rules

4.1 Length of a Match

4.1.1   Participants shall build a robot in advance.

4.1.2   Participants are given 2 hours duration to prepare their robot.

4.1.3   Each group has presentation time of 3 minutes to introduce their robots to the referee on the stage. Presentation can be done in English. If they are unable to present in English language they have to prepare their own translator.

4.2 Theme: Service robot / Service robot system

The robot built can help human carry out and make human life easier. The service robot can be based on one of the following field ONLY:

1)   Food and Beverage

    2) Household

    3) Agriculture

    4) Medical

    5) Transportation

    6) Shopping

4.3 Robot Manual

4.3.1 Participants should submit the robot manual (in A4 size booklet) and the related material such as poster , photos to the organizer before the presentation.

4.3.2 The manual must be in English.

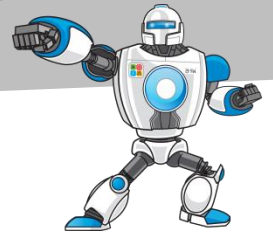4.3.3 The manual should consist of

    1) Robot Name

    2) Team member and the task allocation

    3) Introduction of the project

    4) Characteristic of robot

    5) Functionality of robot

4.4 Deciding the Winner

4.4.1 There will have first round to eliminate group that does not meet requirement before the judge give mark on the robot.

4.4.2 Participants must have one robot manual in English version and their robot must be able to function. If the participants do not fulfill the requirements in the first round, they will be disqualified from the final round.

4.4.3 Score shall consist of :

    1) Relevance to theme

    2) Creativity

    3) Uniqueness

    4) Robot Functionality

    5) Robot manual

    6) Team work

    7) Presentation skill

Sample score record

	Relevance to theme	Creativity	Uniqueness	Robot Functionality	Robot manual	Team work	Presentation skill	Total score	
Name	10	15	15	10	10	10	30	100	**Ranking**
A	8	7	6	9	9	15	20	74	2
B	8	8	7	9	8	10	25	81	1
C	9	5	7	2	6	19	10	58	3

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IYRC 2017

OPEN

(Age:no age limit)

Category

1. Maker Challenge

2. LINE Humanoid (Hockey)

3. LINE Humanoid (Boxing)

IYRA
International Youth Robot Association

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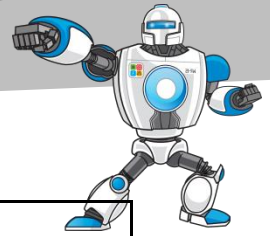
Maker Challenge	
Age	No age limit
Team	Team game (2-5 participants) *must included teachers and students
Robot Kits	No limitation, all electronics part MUST be MRT products
Mission	To design, construct, and program robots with own idea, technology and creativity
Robot Building	Pre Built
Game Method	Presentation and evaluation by panel

1.0 Objective

Provide a platform to encourage engineers, contents makers, researchers, teachers, and even students to design, construct, and program their robots with their own ideas, technology and creativity.

2.0 Robot Dimensions and Weight

2.1 The size and weight of the robot is not limited.

3.0 Restrictions on Robot design

3.1 There is no size and weight limitation for the robot.

3.2 Robot should **ONLY** include LSM ((Line Core M Servo motor) or MRT products (include all MRT new products: MRT-Coconut, MRTduino, Blacksmith)) and there is no limitation on number of servo motor used.

3.3 Robot should move or make motion autonomously without using remote control.

3.4 Robot should make motion following programming code

3.5 Can use and add other materials such as camera, sensors, paper, rings, clips, chopsticks, paper cups, etc.

3.6 VAC (Volt of Alternating Current)power supplies are strictly prohibited for safety reasons.

3.7 Robots shall not cause any danger to the arena and surroundings in anyway whatsoever.

3.8 Robots will need to protect their sensors if necessary from any outside interferences.

4.0 Game Rules

4.1 Length of a Match

4.1.1 Participants shall build a robot in advance.

4.1.2 Participants are given 2 hours duration to prepare their robot.

4.1.3 Each group has presentation time of 3 minutes to introduce their robots to the referee on the stage. Presentation can be done in English. If they are unable to present in English language they have to prepare their own translator.
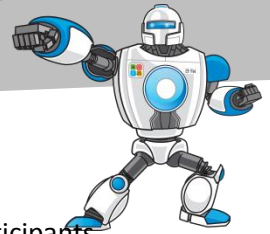
4.2 Competition

4.2.1 During the preparation time of robot, judges can interview the participants randomly. Participant should answer the question sincerely as this is part of the evaluation.

4.2.2 The question is related to the construction of the robot.

4.2.3 Participants that unable to answer the interview question might result in penalty.

4.2.4 The teams should complete their robot construction within the given time frame. If construction time exceed the 2 hours duration, penalty will be given as below:

Time	Penalty
5 mins	-1pt
10 mins	-2pt
15 mins	-3pt
20 mins	-4pt
25 mins	-5pt
>30 mins	-6pt

4.2.5 During presentation, participants are not allowed to modify or repair the robot. However, in the case of battery runs out or robot part damaged judges can authorize repair of robot.
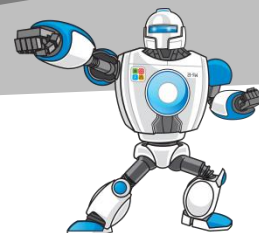
4.3 Theme : Service robot / Service robot system

The robot built can help human carry out task and make human life easier. The service robot can be based on one of the following field ONLY:

1) Food and Beverage
2) Household
3) Agriculture
4) Medical
5) Transportation
6) shopping

4.4 Robot Manual

4.4.1 Participants should submit the robot manual (in A4 size booklet) and the related material such as poster, photos to the organizer before the presentation.

4.4.2 The manual must be in English.

4.4.3 The operation of the robot should according to manual.

4.4.4 The program coding of robots should provide to IYRC organizer in advance.

4.4.5   The manual should consist of:

1)   Robot Name
2)   Team member and the task allocation
3)   Introduction of the project
4)   Characteristic of robot
5)   Functionality of robot

4.5 Deciding the Winner

4.5.1   All winner's robot design copyright (3d design file, programming source code, etc) are belong to the organizer.
4.5.2   There will have first round to eliminate group that does not meet requirement before the judge give mark on the robot.
4.5.3   Participants must have one robot manual in English version and their robot must be able to function. If the participants do not fulfill the requirements in the first round, they will be disqualified from the final round.
4.5.4   Score shall consist of :

1)   Relevance to theme
2)   Creativity
3)   Uniqueness
4)   Robot Functionality
5)   Commercial Possibility
6)   Team work
7)   Presentation skill

Sample Score Record

Name	Creativity (originality, extraordinary idea)	Functionality (move well as programming)	Commercial possibility (business oriented item or not)	Team work	Presentation skill	Total score	Ranking
	25	25	25	5	20	100	

4.5.5   Draw
          If points are draw, rank will be decided as follow:
          1)   Work with less defects will have higher rank than below.
          2)   Work with more creativity point will have higher rank than below
          3)   Work with more presentation point will have higher rank than below
          4)   Work with more completeness point will have higher rank than below
          5)   Work with more functionality over cost point will have higher rank
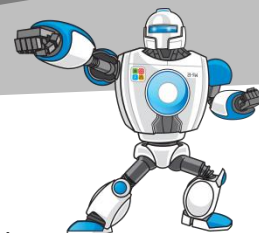
4.6 Disqualification

A team shall be disqualified if it commits any of the following during the match :

4.6.1   Use the electronic parts that are not authorized.

4.6.2   Touching or damaging other participants' robot, laptops, or belongings.

4.6.3   Not obeying the instruction given by judges.

LINE Humanoid (Hockey)		
Age	No age limit	
Team	Team (2 vs 2)	
Robot Kits	LINE Humanoid	
Mission	Remote control humanoid to maneuver a ball into the opponent's goal post	
Robot Building	Pre Built	
Game Method	Tournament	

1.0 Objective

To construct a humanoid robot with high stability and controlling skill to play a hockey game.

2.0 Restrictions on Robot design

2.1 Only LINE Humanoid robot parts are to be used to build the robot.

2.2 You are only allowed to modify the mechanical parts (painting/folding) but not electronic parts. If found guilty, the player would be IMMEDIATELY disqualified.

2.3 Robots shall not damage any part of the field or obstacles deliberately.

2.4 Robots are ONLY allowed to use LINE built in power supply. VAC (Voltage of Alternating Current) power supplies are strictly prohibited for safety reasons.

2.5 Robots shall not cause any danger to the arena & surroundings in anyway whatsoever.

2.6 Robots will need to protect their sensors if necessary from any outside interferences.

2.7 Robots RC receivers will need to be protected from any outside interferences.

3.0 Game Rules

3.1 Length of a Match

3.1.1   Each game is stipulated for 6 minutes with 2 rounds, Each round is stipulated for 3 minutes and a rest time of 1 minute will be given after the 1st round.

3.2 Building of Robot

3.2.1   Prebuilt and programmed.

3.2.2   The hockey stick will be provided by organizer and the hockey.stick file can be obtained from organizer if the participants have the 3D printer to print out.

3.2.3   The battery specification, length of robot leg and arm should strictly adhere to the instruction manual (LINE Humanoid)

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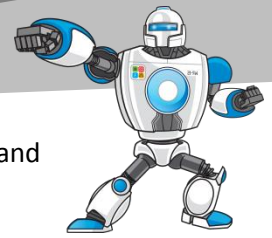
3.2.4   The appearance of the humanoid can be modified by changing colour and accessories.

3.2.5   The movement of the humanoid can be programmed freely.

3.2.6   Each team can prepare one backup humanoid.

3.3 Starting the Robot

3.3.1   Whistle will be blown as a sign of start of the match.

3.3.2   Participant is allowed to start (SWITCH ON) the robot using single switch operation.

3.3.3   The participant who remote controls the robot shall keep distance with the game field area without touching or disturbing the game field.

3.3.4   The humanoid can be control using any android phone under flight mode.

3.4 Competition Tasks

3.4.1   The games will be based on **"knock out"** system. All the teams will be distributed in opposing pairs by IYRC committee randomly.

3.4.2   During the game, 10 balls will be put in the game field. 8 white balls (golf ball) and 2 gray ball (Goma wheel M rim) will be put at the middle of the game field.

3.4.3   Each team shall consist of 2 robots and 2 students with each student controlling one robot. Teams can choose between two roles variants defender and strikers

- ▪ **Defender**
  - cannot leave his area (his half of the field), therefore cannot enter opponents area.
  -allowed to enter own penalty area to protect the gate, but stay there not more than 10 seconds
- ▪ **Striker**
  - allowed to enter both own and opponent's area
  - does not allowed to enter own penalty area
  - allowed to enter opponent's penalty area to hit the gates, but stay there not more than 10 seconds.

3.4.4   The team should distribute the roles prior the game and provide this information to referee. Roles cannot be changed during the match, but can be changed between the matches.

3.4.5   Upon removal or a robot from the playing pitch, it can only re-enter the game upon referee's approval.

3.4.6   Robots can deploy any tactics or maneuvers, as long as it does not constitute a foul.

3.4.7   There striker and defender robot can only stay within the penalty area for a maximum of 10 seconds.

3.4.8   The ball that entered or scored by humanoid's leg is not valid and the ball will be placed back to the middle of game field by referee.

3.4.9   Within 3 minutes if all the 10 balls are scored or entered into the goal post the game will end.
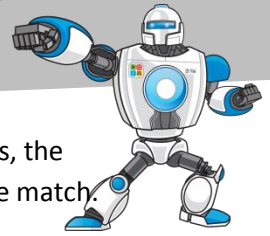
3.4.10   An offender will be issued a yellow card. Upon receiving 2 yellow cards, the player will be removed and isolated for 1 minute before re-enter to the match.

3.4.11   Extra time shall be played only in the event of a draw.

3.4.12   Penalties ball will be placed on a yellow dot. Robot which making a shot should stand in front or beside the yellow dot to hit the ball, robot is not allow to move and control the ball into the gate.

3.4.13   All robots will be collected by referees before the competition begin, cannot share the same robot with other participants.

3.4.14   The parts which are fallen or broken from the robots cannot fix back onto the robots during the match.

3.4.15   While the match is in progress, at any time the referee whistles, the human operator should stop the robot.

3.4.16   Robot is not allow to lie down more than 5 seconds.

3.5 Deciding the Winner

3.5.1   Within 6 minutes, the team with highest goals will be the winner.

3.5.2   The 'knock-out' stage shall not consist of any points and the winner of the game shall proceed to the next round. Extra time shall be played in an event of a DRAW.

3.5.3   The time limit for extra time shall be 1 minute.

3.5.4   For each white color ball goal 1 point will be given and for gray color ball goal 3 points will be given.

3.5.5   In the event of a DRAW by the end of extra time, a penalty shoot-out shall decide the match with each team being allocated 3 penalties.

3.5.6   'Sudden death' penalties shall decide the match in the event both teams are still tied for score. The team that misses the first penalty with the other team scoring their penalty, losses the game.
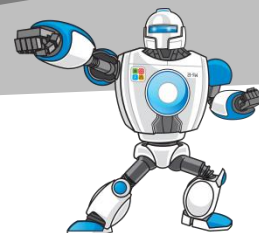
3.6 Disqualification

A team shall be disqualified if it commits any of the following during the match:

3.6.1   Touching the robots while the match is in progress.

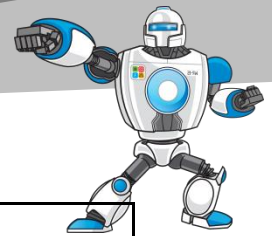3.6.2   Robot does not comply with the restrictions.

4.0 Game Field

M Wheel Rim

Golf ball

160cm

5cm

12.5cm

15cm

29cm

39cm

30cm

80cm

15cm

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LINE Humanoid (Boxing)		
Age	No age limit	
Team	Individual	
Robot Kits	LINE Humanoid	
Mission	Remote control humanoid to throw punches to knock down opponents as many times as possible in three minutes	
Robot Building	Pre Built	
Game Method	Tournament	

1.0 Objective

To construct a humanoid robot with high stability and controlling skill to play a boxing game.

2.0 Restrictions on Robot design

2.1 Only LINE Humanoid robot parts are to be used to build the robot.

2.2 You are only allowed to modify the mechanical parts (painting/folding) but not electronic parts. If found guilty, the player would be IMMEDIATELY disqualified.

2.3 Robots shall not damage any part of the field or obstacles deliberately.

2.4 Robots are ONLY allowed to use LINE built in power supply. VAC (Voltage of Alternating Current) power supplies are strictly prohibited for safety reasons.

2.5 Robots shall not cause any danger to the arena and surroundings in anyway whatsoever.

2.6 Robots will need to protect their sensors if necessary from any outside interferences.

2.7 Robots RC receivers will need to be protected from any outside interferences.

3.0 Games Rules

3.1 Length of a Match

3.1.1 Each game is stipulated for 3 minutes.

3.2 Building of Robot

3.2.1 Prebuilt.

3.2.2 The battery specification, length of robot leg and arm and surface area of humanoid foot pedal should strictly adhere to the instruction manual (LINE Humanoid)

3.2.3 The appearance of the humanoid can be modified by changing color and accessories.

3.2.4 The movement of the humanoid can be programmed freely.

3.2.5 Each team can prepare one backup humanoid.

3.3 Starting the Robot

3.3.1 Whistle will be blown as a sign to start the match.
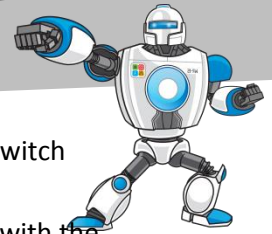
3.3.2 Participant is allowed to start (SWITCH ON) the robot using single switch operation.

3.3.3 The participant who remote controls the robot shall keep distance with the game field area without touching or disturbing the game field.

3.3.4 The humanoid can be control using android phone under flight mode.

3.4 Competition Tasks

3.4.1 The games will be based on **"knock out"** system. All the participants will be distributed in opposing pairs by committee randomly.

3.4.2 The humanoid can used its hand, leg or body to knock opponent down.

3.4.3 Once the humanoid fall down after pushing by opponent or fall down by itself, 1 mark will be awarded to opponent.

3.4.4 Except the humanoid's feet, if any other body parts of the humanoid(hand, knee, chest, back) touch on the ground of the stage, 1 marks will be awarded to the opponent.

3.4.5 There will be no rest time during the competition. (For example, the humanoid fall down and cannot get up by itself or the humanoid lost control) the competition will carry on.

3.4.6 Each time when the opponent's humanoid being knock down, participants should obey judge instruction to move back to certain distance and wait for opponent's humanoid to get up.

3.4.7 Judges will countdown for 10 seconds when one's humanoid fall down or lost control, if the humanoid cannot back to its normal operation within this 10 seconds, judges will declare that the participants lost the competition.

3.4.8 Both robots must attempt to cross over and engage the opponent robot as soon as the match starts. The robot can deploy any tactics or maneuvers, as long as it does not constitutes a foul.

3.4.9 If the humanoid is stop moving to attack the opponent for more than 10 seconds a yellow card will be issued to the offender. Upon receiving 2 yellow card, 1 mark will also be awarded to opponent.
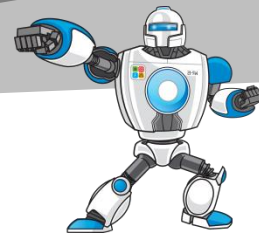
3.5 Deciding the Winner

3.5.1 Within 3 minutes, the participants with highest scores will be the winner.

3.5.2 The 'knock-out' stage shall not consist of any points and the winner of the game shall proceed to the next round.

3.5.3 Extra time shall be played in an event of a DRAW.

3.5.4 The time limit for extra time shall be 1 minute.

3.5.5 'Sudden death' penalties shall decide the match in the event both participants are still tied for score. The participants that fall down first losses the game.

3.6 Disqualification

A team shall be disqualified if it commits any of the following during the match:

3.6.1 Touching the robots while the match is in progress.

3.6.2   Robot does not comply with the restrictions.

4.0 Game Field

90cm   90cm