STEM AI ROBOTICS VIET NAM 2024

- IYRC VIET NAM -

CONTENT

OVERVIEW

- **Date: 21th December 2024**
- **Venue: Quan Ngua Stadium – Ha Noi, Viet Nam**
- **Organizer:**
  - CENTRAL HO CHI MINH COMMUNIST YOUTH UNION
  - MINISTRY OF SCIENCE AND TECHNOLOGY
  - MINISTRY OF EDUCATION AND TRAINING
- **Participants:**
  - **STEM AI ROBOTICS VIET NAM 2024:** More than 1000 participants
  - **IYRC VIET NAM:** More than 250 participants

2024 IYRC

INTERNATIONAL YOUTH ROBOT COMPETITION VIET NAM

21th Dec, 2024

HANOI, VIETNAM

TIMELINE

- **20th Oct 2024** | Press Conference Public Contest
- **5th Dec 2024** | Deadline for Registration
- **21th Dec 2024** | IYRC VIET NAM Competition

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GENERAL GAME RULES

Common Rules

• The organizer reserves the right to disqualify any participants if found violates any rules.
• In the event of any disagreement or misunderstanding, the judges' decision will be final.
• 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 competition category.

Participants

• Participants are allowed to participate in Maximum 2 categories + 1 Creative Design (Compulsory).

Scoring

• Each participant/team representative needs to confirm the competition result and sign immediately after the end of the match.
• Participants are not allowed to dispute the result recorded after the confirmation.
• All time are measured using a stopwatch.

GENERAL GAME RULES

Competition Rules

• Prior to the start of the competition, all robots will undergo an inspection.

• If a robot does not meet the specifications or design restrictions, the participant will be given a grace period of 15 mins to modify their robot to meet the specification or comply with the design restriction, failure to do so within the time limit the participant will be disqualified.

• If the robots encounter any technical difficulty before the start of the match, they will be given 5 minutes to fix the robot.

• Judges can assign practice playfield and restrict practice time per participant / team to ensure equal and fair practice time.

• RF Remote Control will be provided by organizer for categories that requires a remote control robot. In this case, robot should set to Channel 1 or programmed to Channel 1(MRTX mainboard) in order for it to work.

• 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.

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

• Sharing of robots among the participants in the competition is not allowed.

GENERAL GAME RULES

Robot Design Restrictions

• Only MRT Series, & HUNA educational robot kit are allowed (Cross using parts is allowed).
• No limitation to the amount of blocks used to build the robot as long as within size and weight restrictions.
• My Robot Time Toy series and MRT Soccer Robot are Strictly NOT ALLOWED.
• Electronic parts are not allowed to be modified in any way. If found guilty, the participant would be IMMEDIATELY disqualified.
• No modification of parts are allowed (no bending, sharpen or change shape of parts). All parts must stay in original state.

Robots

• 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.
• Robots will need to protect their sensors from any outside interferences if necessary.
• Robots RC receivers will need to be protected from any outside interferences.

Game Fields

• Robots shall not damage any part of the field or obstacles deliberately.
• Robots shall not cause any danger to the arena and surroundings in anyway whatsoever.

GENERAL GAME RULES

Fouls (2 Fouls = Disqualification)

- Not obeying judges' order. Disrupting order
- Communication with spectators or other participants

IMMEDIATE Disqualification

- Robot does not comply with the size/weight restrictions of the game participated
- Usage of parts that is not authorized before match
- 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 robot still cannot function after the robot is turned back on, the participant will be disqualified.
- When the robot is not able to move not due to technical reasons for more than 10 seconds (due to fallen off parts, stuck, design flaw, etc)
- Carry storage devices including MP3 player, PMP, USB memory
- Touching or damaging other participant's robot, laptops, or belongings
- Touching the robot or the game field and it's contents while the match is in progress.

GENERAL GAME RULES

Remote Controlled Robots

• Participants who remote control the robot shall keep a certain distance away from the game field area without touching or disturbing the game.
• Any related to channel setting in programming, do program it to Channel 1 (default) as RF Remote Control will be used in the competition.

Other Rules

• While the match is in progress, at any time the referee whistles, the human operator should stop the robot.
• Upon removal of a robot from the playing pitch, it can only re-enter the match upon referee's approval.
• The parts which are fallen or broken from the robots cannot be fixed back onto the robots during the match.
• The referee's decision would be final and no disputes will be entertained.

GENERAL GAME RULES

Team Tournament Rules

- All the tournament based games will be based on “Knock out” system.
- Participants are to submit their robots for inspection in the morning of their competition day before 9am.
- After participant’s robot are submitted for inspection and passed the restricted regulations, participants are not allow to touch their robots until their match begins with the approval of the referee. Any participant who touches their own or other’s robot without consent of the referee will be IMMEDIATELY disqualified.
- All the teams will be distributed in opposing pairs by IYRC committee randomly.
- Number of participants per team is determine by category of game registered.
- Each participant is to control his/her own robot only
- Only the winning teams will proceed to the next round of competition.

COMPETITION CATEGORIES

Green energy robot

Robot olympic

Creative design

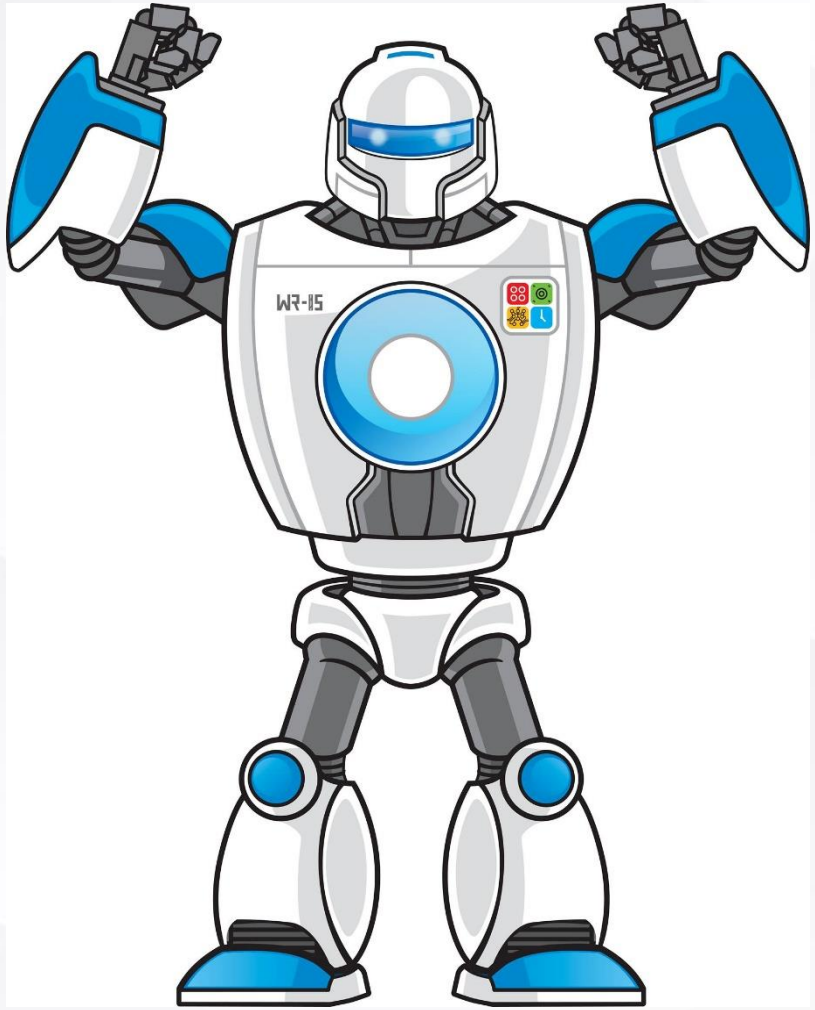
COMPETITION CATEGORIES

THEME	GAME CATEGORY	AGE GROUP	PARTICIPANT
A. GREEN ENERGY ROBOT	A1: Green energy station	6 - 11 years old	Team (2 Participants)
	A2: Produce raw material	12 - 18 years old	Team (2-3 Participants)
B. ROBOT OLYMPIAD	B1: Push - Push	6 - 11 years old	Individual
	B2: Soccer (Junior)	6 - 11 years old	Team (3 Participants)
	B3: Soccer (Senior)	12 - 18 years old	Team (3 Participants)
	B4: Volleyball	12 - 18 years old	Team (2 Participants)
	B5: Humanoid	9 - 18 years old	Individual
C.CREATIVE DESIGN	C1: Future innovators	6 - 18 years old	Team (2-3 Participants)
	C2: Design Game	6 - 18 years old	Team (2-3 Participants)

my robot time

IYRA
International Youth Robot Association

A. GREEN ENERGY ROBOT



A1. GREEN ENERGY STATION

Age	6 - 11 years old
Participant	Team 2 participants
Robot Kits allowed	MRT Coconut
Robot Building	Pre-build robot Pre-programmed
Mission	Students use (flip and rotate) the puzzle pieces on the puzzle table to create a closed path and move the Robot to the charging stations.
Game duration	5 minutes

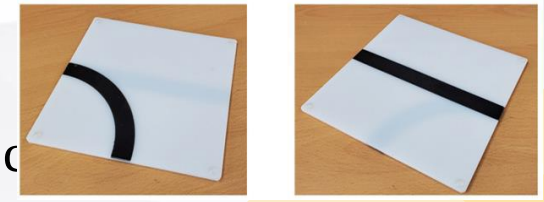
A1. GREEN ENERGY STATION

Obstacle Puzzle Edition

- Obstacle puzzle plates are given four, which interfere with the driving of the starting coconut.
- The position of the obstacle puzzle board is determined by random drawing before the start of the game.
- The size of the obstacle puzzle board is 19.5 cm wide and 19.5 cm long, and it is black.

Road puzzle board

- The road puzzle board is marked with a black line to create a line for the starting coconut to drive
- The size of the road puzzle board is 19.5cm wide and 19.5cm long.

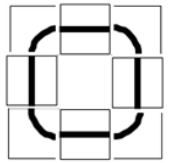
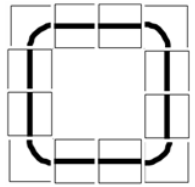
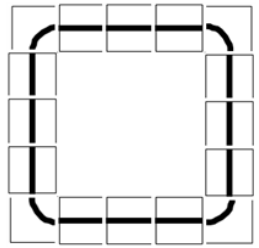


As shown in the figure, the road puzzle board has black lines in front and back c s and curves, so you can flip and make a different path.

A1. GREEN ENERGY STATION

Game Rules

- The race time is 5 minutes, and within 5 minutes the departing coconut must depart and arrive at the point of arrival.
- If the arrival point is not reached within the game time, the team's score will be determined only by the mission performance score up to the point after 5 minutes.
- Prior to the start of the game, the position of the five charging stations and the position of the four obstacle puzzle boards are determined by random drawing by the team.
- The following is how to obtain a mission score while traveling to the point of arrival.
- The road puzzle board flips back and forth to create a road and the starting coconut can drive.
- The obstacle puzzle board is immovable.
- Check the location of the obstacle puzzle board and earn a mission score when the coconut drives along the path below.

 2×2	 3×3	 4×4	 5×5
4 point	10 point	16 point	22 point

A1. GREEN ENERGY STATION

- You make a round road with a starting coconut and drive to score points, and even if you drive the same road again, the same road is not recognized as a score.
- If you want to make a round road with a starting coconut to earn points, and if you want to get points again, you must make a round road made of another route into a road puzzle board to earn points.
- All scores obtained by creating a round road while driving are summed up to become mission scores obtained by the team.
- If you arrive at the point of arrival within 5 minutes of the match, the points at the end of the charging station will be an additional point. Each charging station will have a different number of points (1 station has 5 points, 3 stations have 10 points and 1 station has 15 points).
- The final score is the sum of the total mission scores obtained during the match and the points of charging station score captured at the point of arrival of the score.

A1. GREEN ENERGY STATION

Scoring

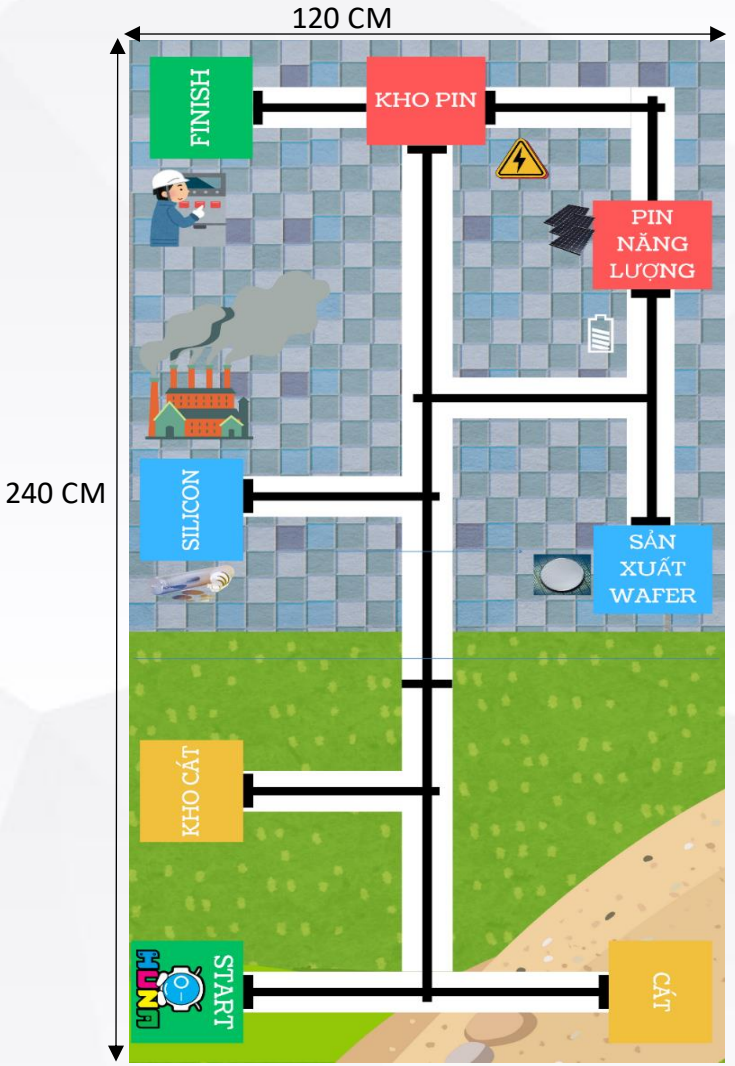
- The final score is the sum of the total mission points and the points at the charging station location.

Win/Lose Criteria

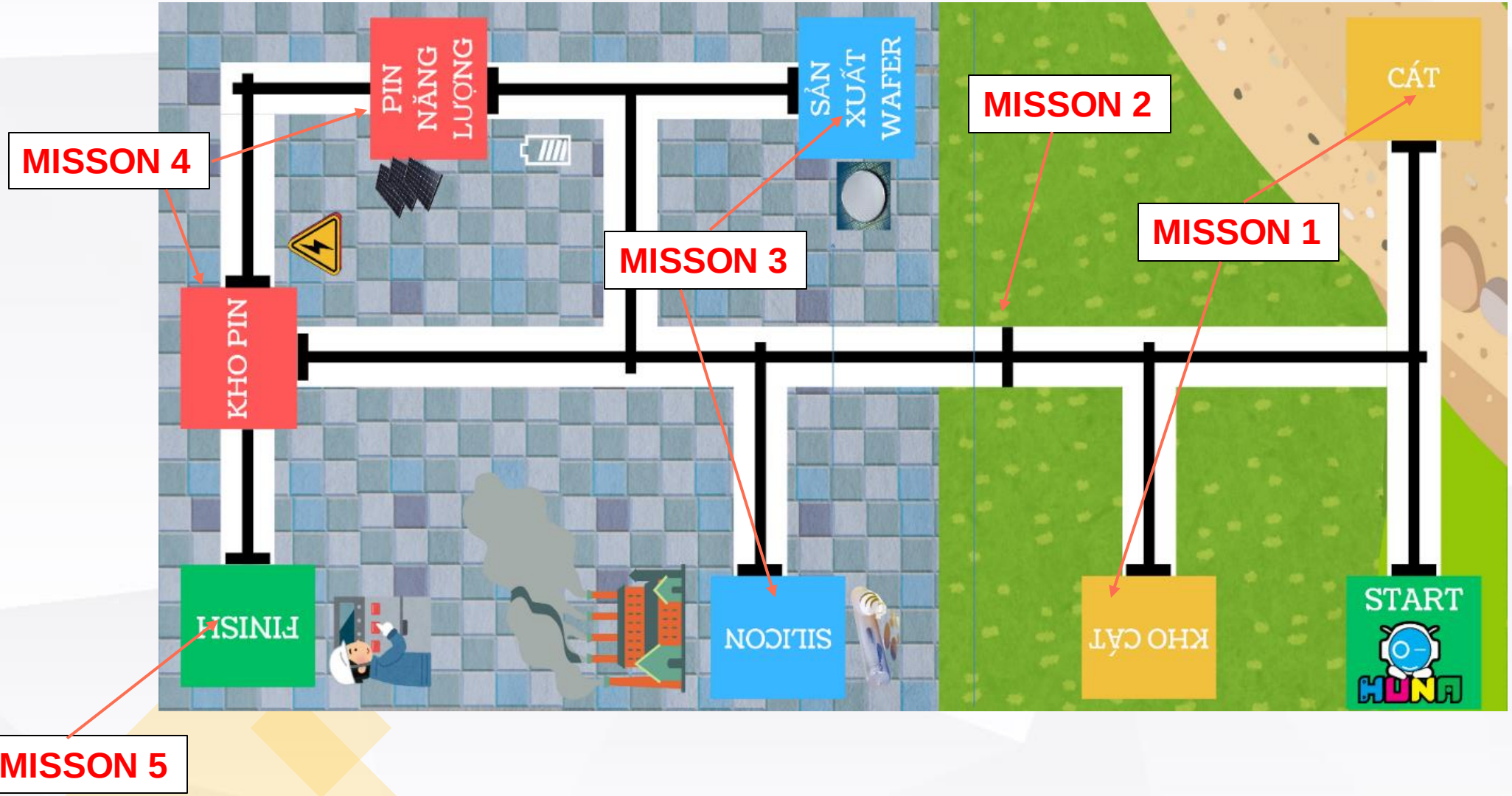
- Team with the highest score is the winner
- In case the teams have the same number of points, the winning team is the team:
    - The team that reaches the destination in the shortest time of 5 minutes.
    - The team with the lower average age.

A2. PRODUCE RAW MATERIAL

Age	12 - 18 years old
Participant	Team 2-3 students
Robot Kits allowed	MRT Series or Huna Science Class
Robot Building	Pre-build robot Pre-programmed (Block-based coding)
Mission	Robots automatically transport materials to the corresponding area
Game duration	10 minutes

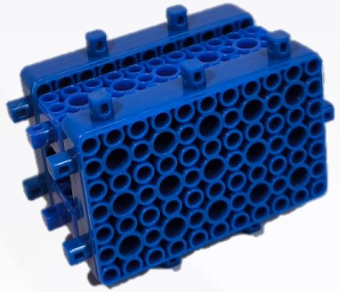


A2. PRODUCE RAW MATERIAL

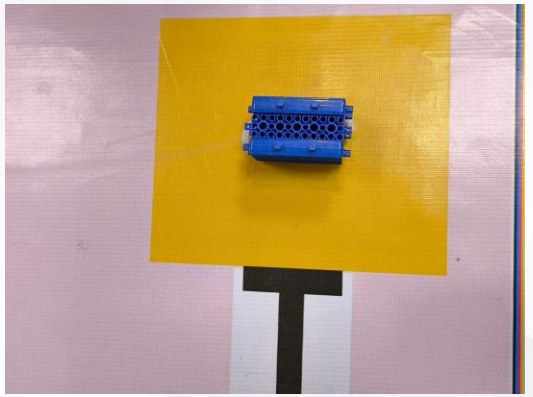


A2. PRODUCE RAW MATERIAL

MISSION 1



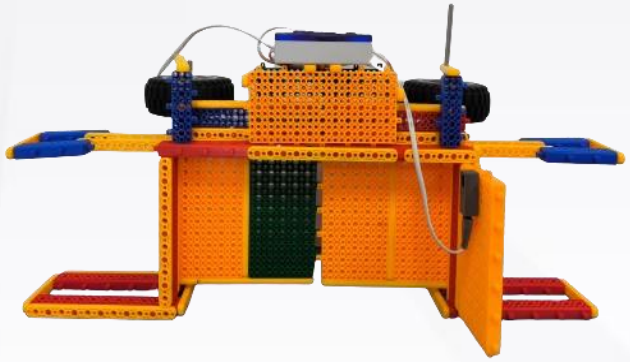
SANDBOX



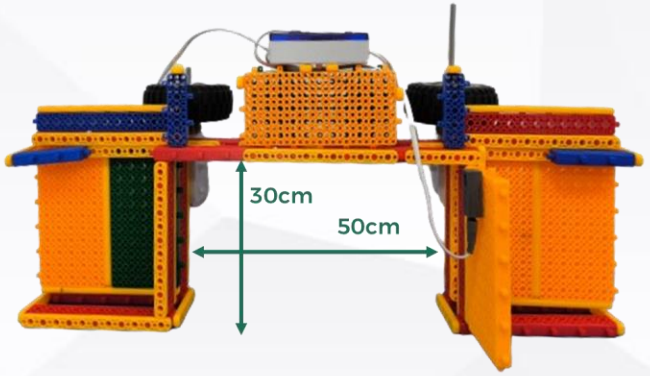
LOCATION OF SANDBOX

A2. PRODUCE RAW MATERIAL

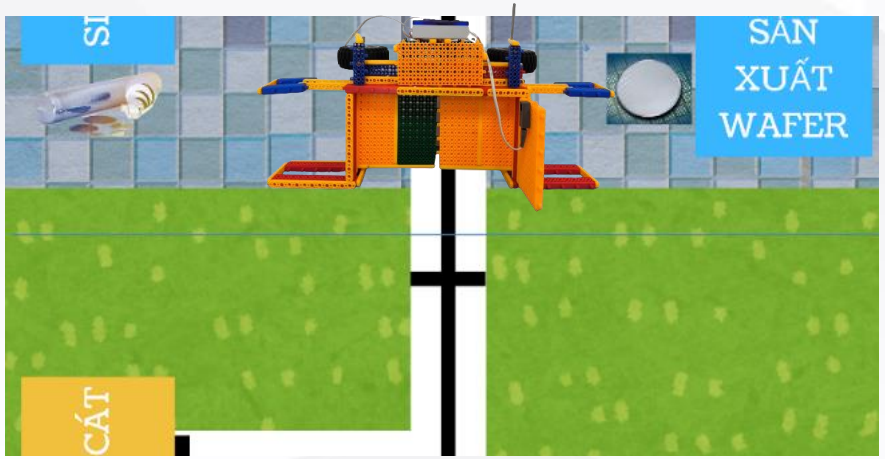
MISSION 2



GATE CLOSED



GATE OPENED



LOCATION OF GATE

A2. PRODUCE RAW MATERIAL

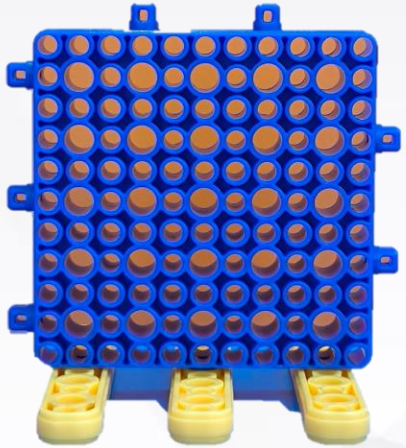
MISSION 3

SILICON

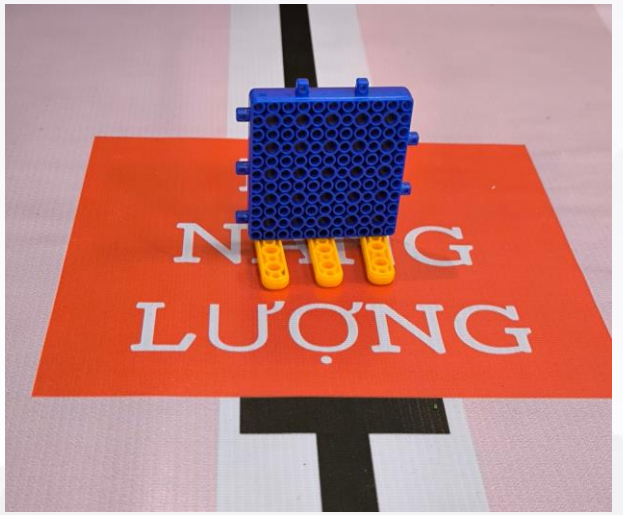
LOCATION OF SILICON

A2. PRODUCE RAW MATERIAL

MISSION 4



SOLAR PIN



LOCATION OF SOLAR PIN

A2. PRODUCE RAW MATERIAL

Game rules:

- **Mission:** Within 10 minutes, players upload block-based code to guide the robot through various mission: moving from the starting point to gather materials, trasporting them to their respective areas, and reaching the finish line. Specifically, as follows:
- **Mission 1**: Transport sand to the sand warehouse.
- **Mission 2**: Check-in at the factory gate.
- **Mission 3**: Transport silicon to the Wafer production area.
- **Mission 4**: Transport solar panel to the solar panel warehouse.
- **Mission 5:** Check-out at the finish line.

Players can attempt each mission multiple times during the competition.

A2. PRODUCE RAW MATERIAL

Scoring: Total: 100 points

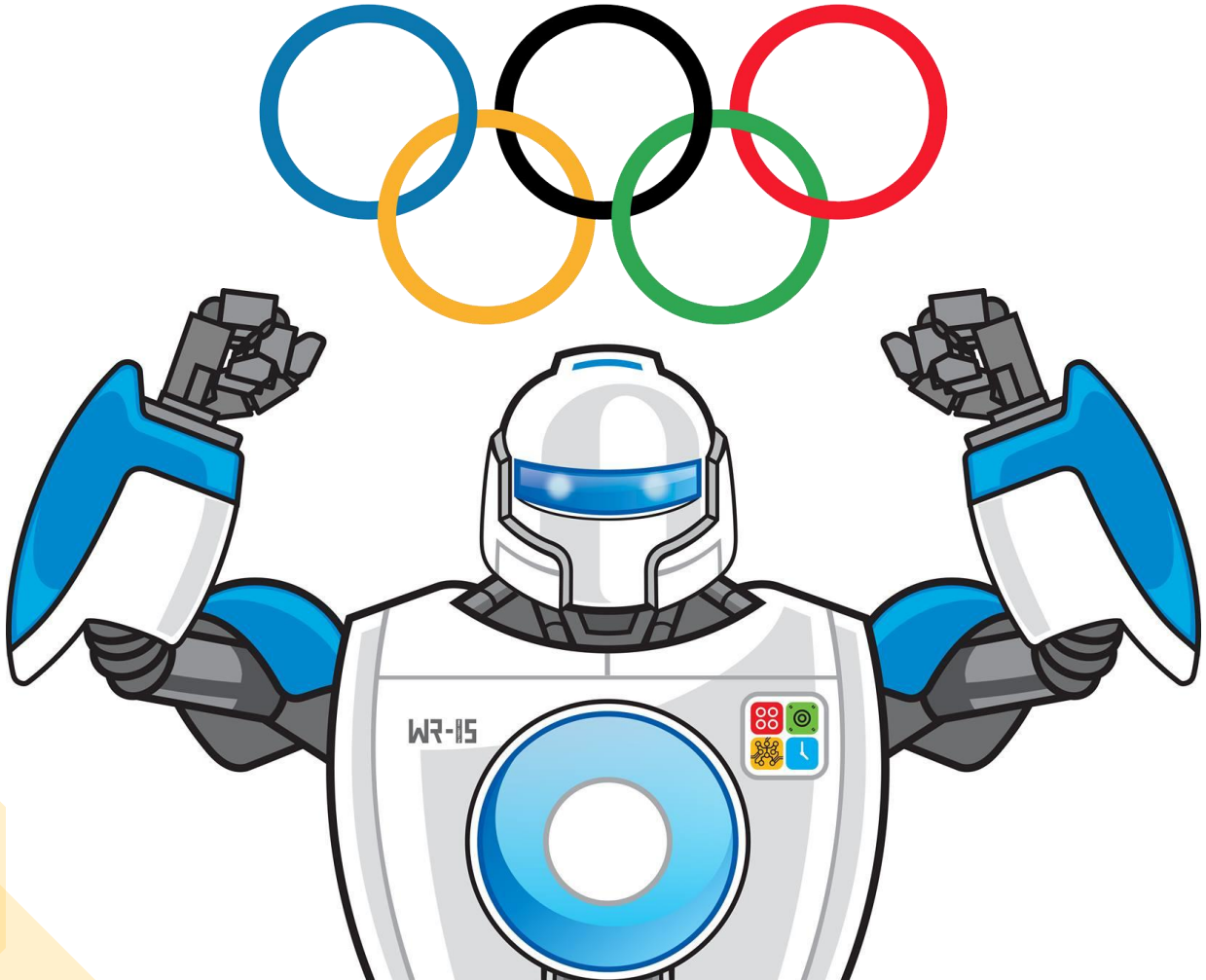
- **Mission 1:** Transport sand to the sand warehouse: 20 points.
- **Mission 2:** Check-in at the factory gate: 10 points.
- **Mission 3:** Transport silicon to the Wafer production area: 20 points.
- **Mission 4**: Transport solar panel to the solar panel warehouse: 25 points.
- **Mission 5:** Check-out: 25 points.

A2. PRODUCE RAW MATERIAL

Win/Lose Criteria

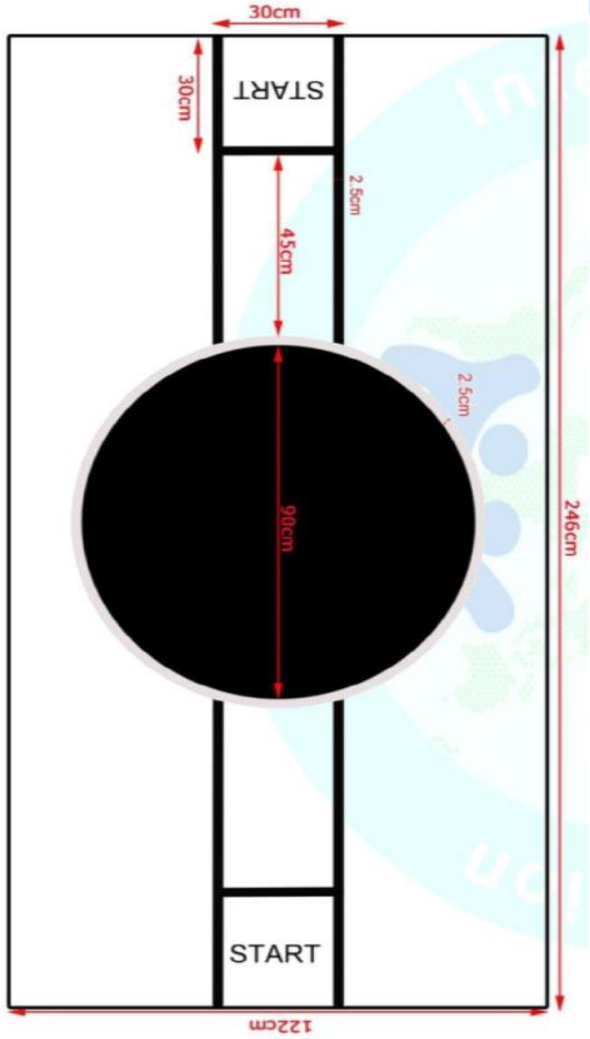
- Highest score of the two attempts will be used for ranking of winners.
- Team with the highest score is the winner. If there are two or more participants with the same score, the lowest time recorded to finish the mission is the winner.
- If the points and time of both participants are the same, the participant who is younger would be the winner.

B. ROBOT OLYMPIC



B1. PUSH - PUSH

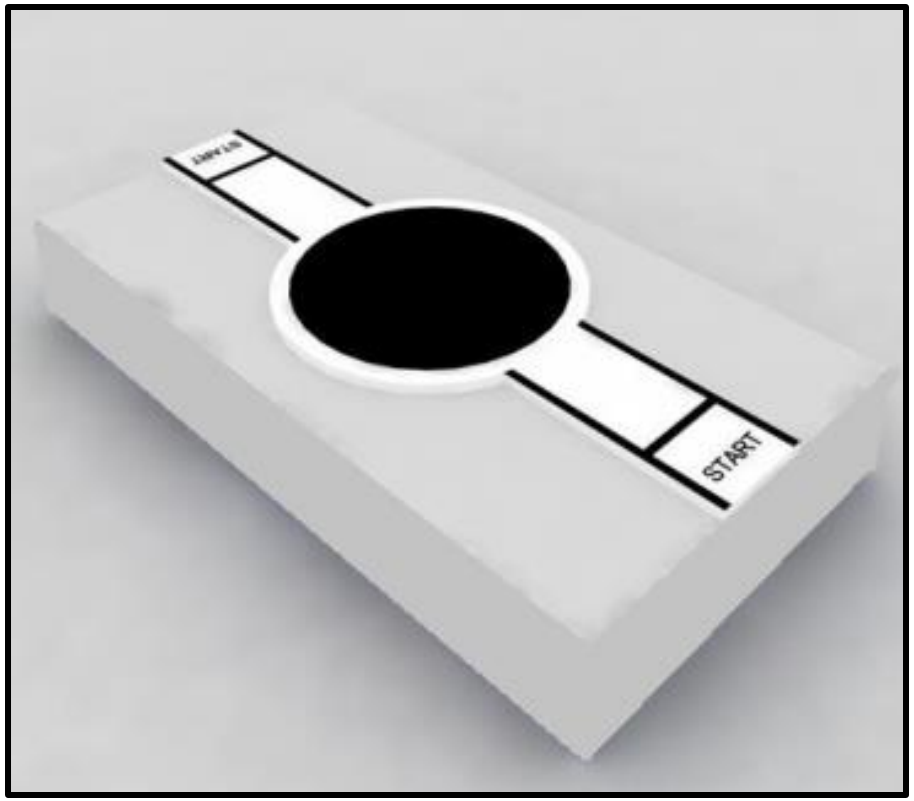
Age	6 - 11 years old
Participant	Individual
Robot Kits allowed	MRT Series hoặc Huna Science class
Robot Building	Pre-build remote control robot
Mission	Control robot to push opponent outside of the black ring
Game duration	2 minutes



B1. PUSH - PUSH

Game rules:

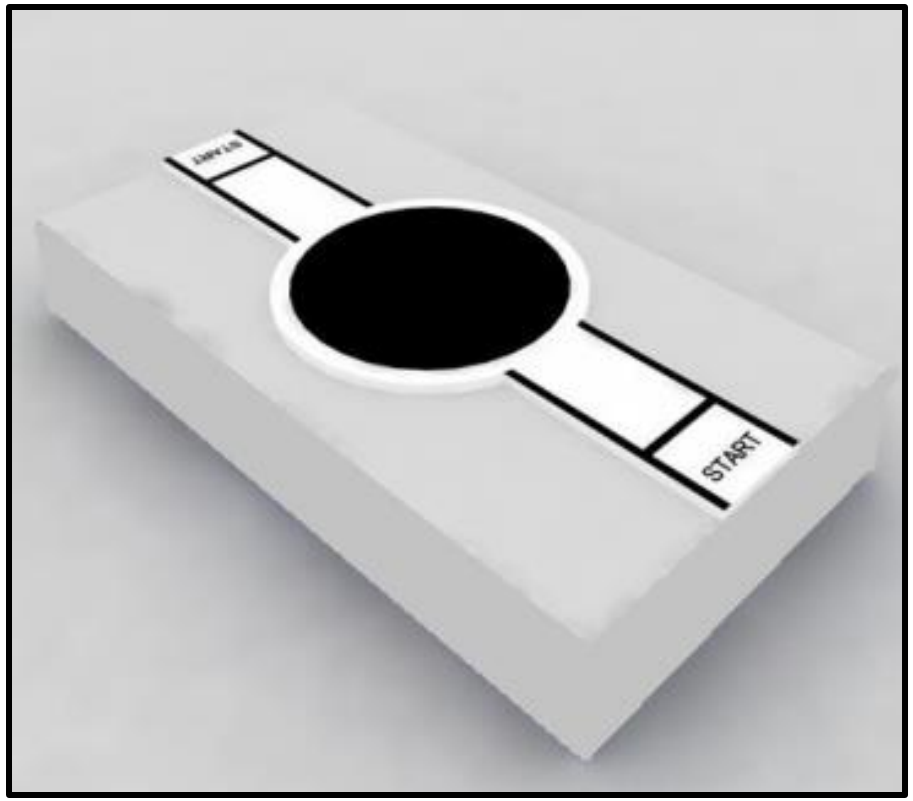
- ❖ **Mission:** Students control robot to push opponent outside of the black ring.
- The match will end when:
- Either of the two robots cannot move back.
- Either of the two robots is pushed out of the black ring.
- The match time runs out.



B1. PUSH - PUSH

❖ Win/Lose Criteria

- If the match time runs out and both robots are still moving inside the arena, or if both robots fall out of the arena at the same time, then the weight of the robots will determine the winner, with the lighter robot winning.
- Win: Pushing at least half of the opponent's robots out of the arena, or the opponent robot cannot move back the arena.

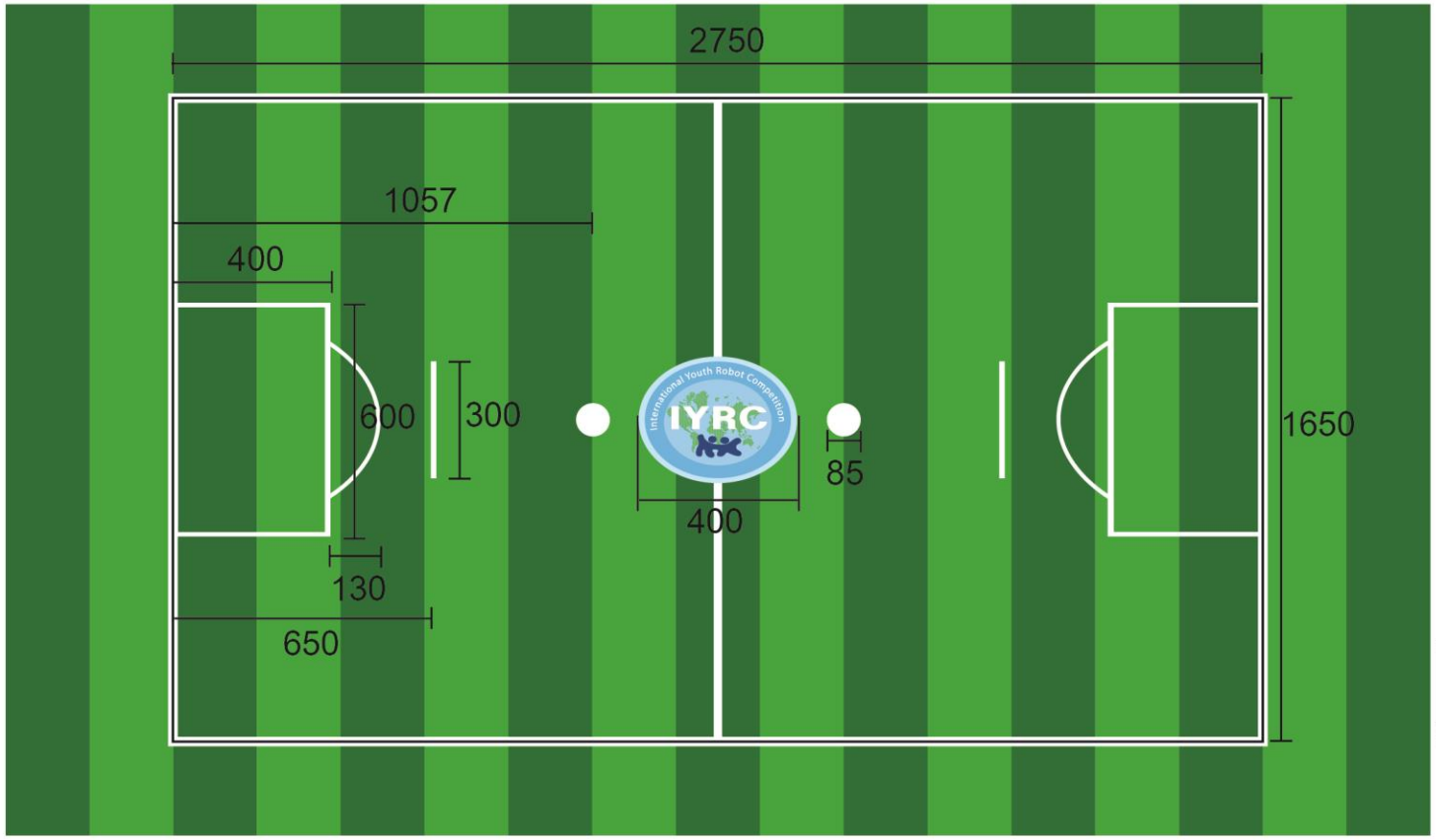


B2. SOCCER (JUNIOR)

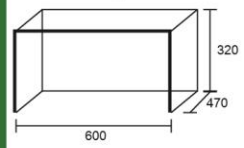
Age	6 - 11 years old
Participant	Team (3 Participants)
Robot Kits allowed	MRT Series or Huna Science Class
Robot Building	Pre-build remote control robot
Mission	Control the robot to kick the ball to the opponent's goal
Game duration	2 matches 2 minutes/match 1 minute break between 2 matches

B2. SOCCER (JUNIOR)

Soccer Field



Goalpost



measure : mm

B2. SOCCER (JUNIOR)

Game rules

- ❖ **Mission:** When the referee blow whistle, contestant control 3 robots of their team to kick the ball to the opponent's goal
- ❖ **Win/Lose criteria**
- The team with the most goals wins.
- If two teams have an equal number of goals, the team with the first goal during the match will be the winner.
- If two teams do not score any goals during the match, a penalty shootout will be held until a winning team is found.

B2. SOCCER (JUNIOR)

Penalty shootout laws:

- Ball will be placed on the white dot.
- Robot which is making the penalty shot should start its movement in the mid field circle to hit/push the ball into the goal without any part of the robot's body crossing the white line.
- 3 attempts will be given for each team to score as many goals possible.
- If both teams has the same score after the 3 attempts a Sudden Death will occur.

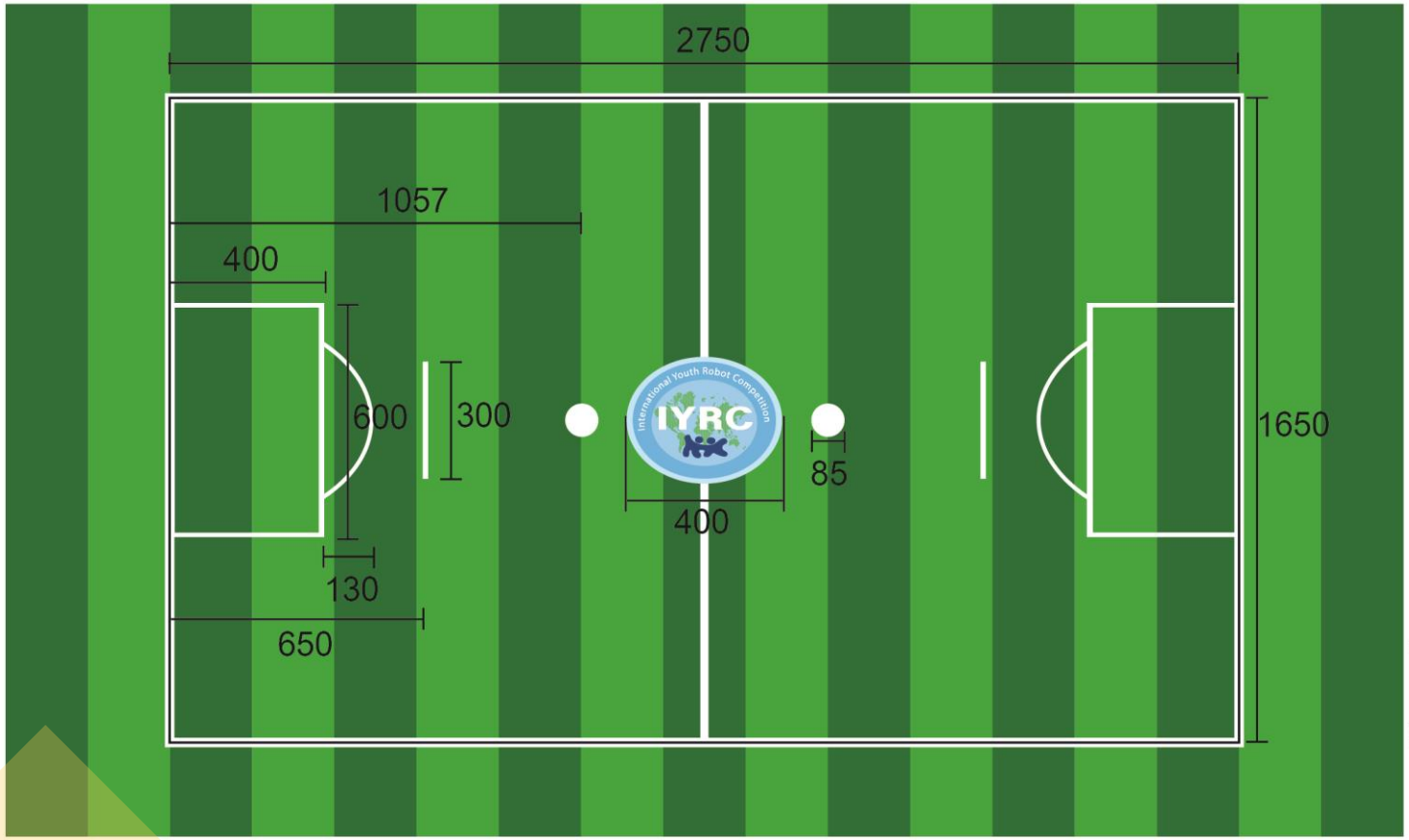
Attention: Penalty shootouts only use 1 robot and 1 controller for all shots. There is no goalkeeper.

B3. SOCCER(SENIOR)

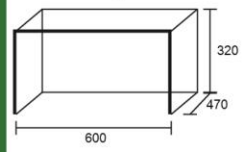
Age	12 - 18 years old
Participant	Team (3 Participants)
Robot Kits allowed	MRT Series or Huna Science Class
Robot Building	Pre-build remote control robot
Mission	Control the robot to kick the ball to the opponent's goal
Game duration	2 matches 2 minutes/match 1 minute break between 2 matches

B3. SOCCER(SENIOR)

Soccer Field



Goalpost



measure : mm

B3. SOCCER(SENIOR)

Game rules

- ❖ **Mission:** When the referee blow whistle, contestant control 3 robots of their team to kick the ball to the opponent's goal
- ❖ **Win/Lose criteria**

- The team with the most goals wins.
- If two teams have an equal number of goals, the team with the first goal during the match will be the winner.
- If two teams do not score any goals during the match, a penalty shootout will be held until a winning team is found.

B3. SOCCER(SENIOR)

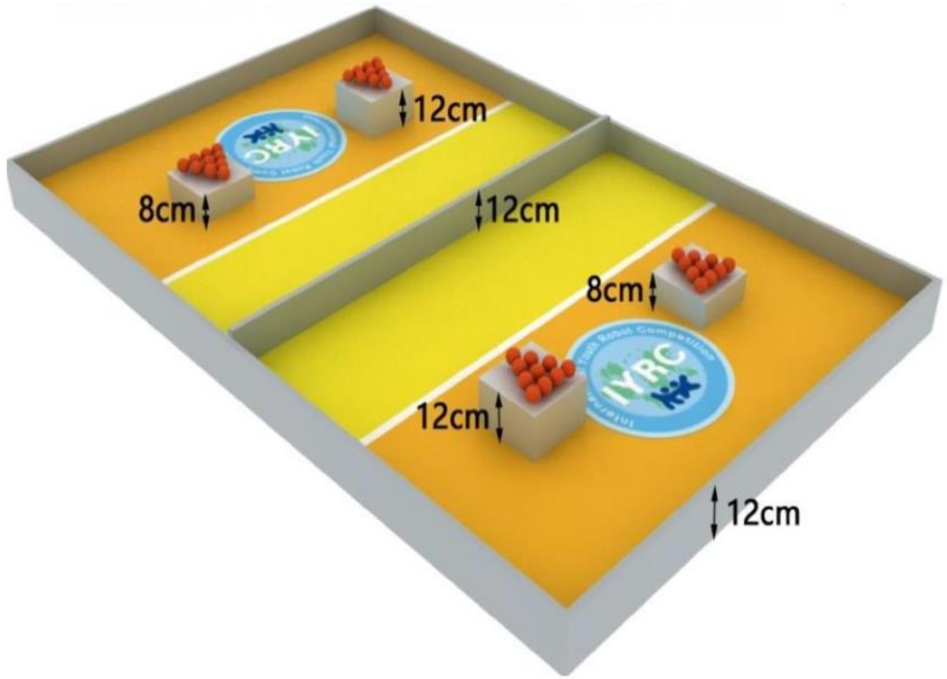
Penalty shootout laws:

- Ball will be placed on the white dot.
- Robot which is making the penalty shot should start its movement in the mid field circle to hit/push the ball into the goal without any part of the robot's body crossing the white line.
- 3 attempts will be given for each team to score as many goals possible.
- If both teams has the same score after the 3 attempts a Sudden Death will occur.

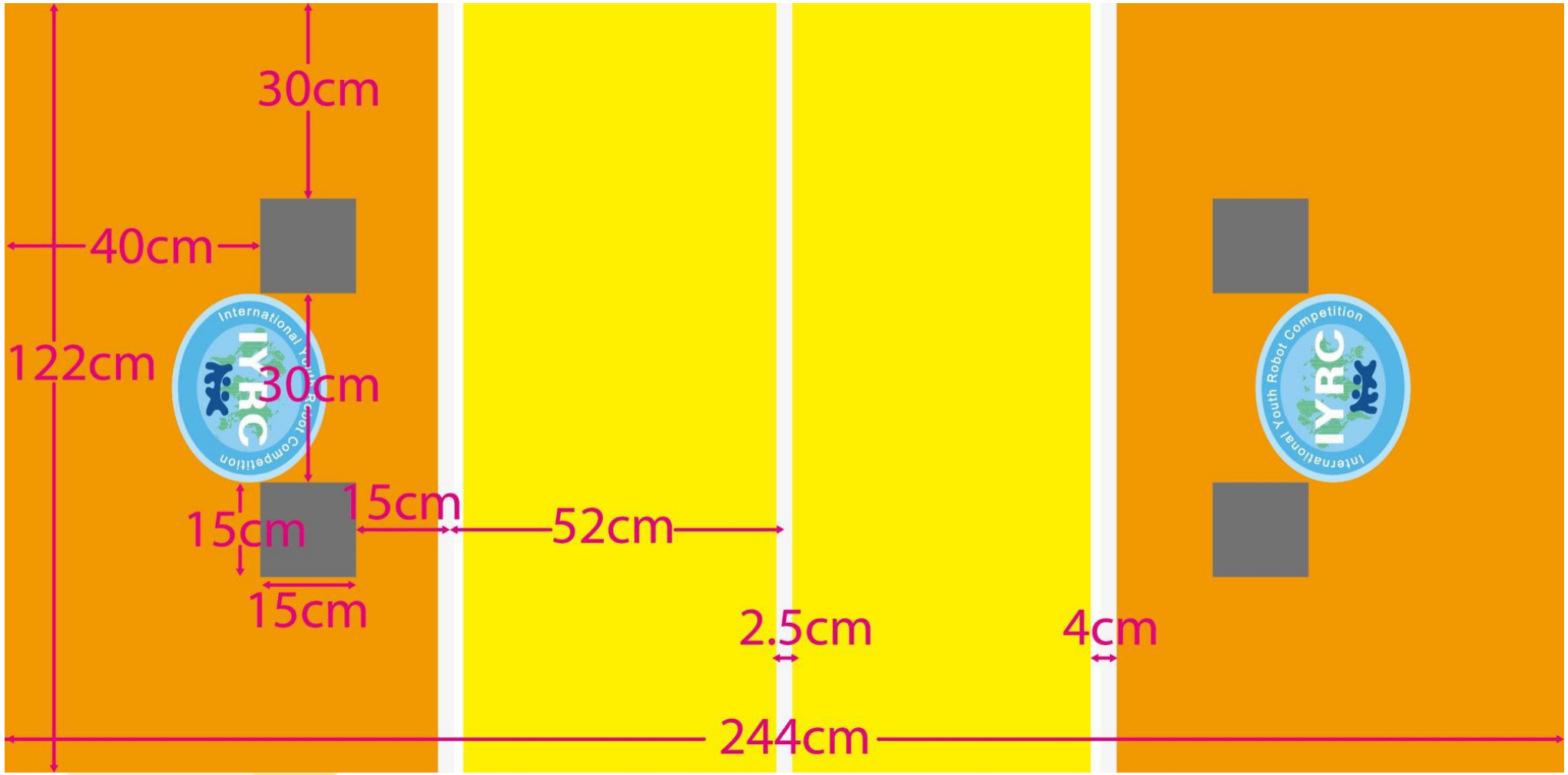
Attention: Penalty shootouts only use 1 robot and 1 controller for all shots. There is no goalkeeper.

B4. VOLLEYBALL

Age	12 - 18 years old
Participant	Team (2 Participants)
Robot Kits allowed	MRT Series or Huna Science class
Robot Building	Pre-build remote control robot
Mission	Control robot to transfer balls into opponent's field
Game duration	3 minutes



B4. VOLLEYBALL



B4. VOLLEYBALL

Dimensions and Restrictions

- Initial size shall not exceed 25cm (H) X 25cm (W) X 25cm (L). However, robots are allowed to expand to any size after the game starts

Game rules

❖ **Mission:** Control robot to transfer table tennis balls into opponent's field

- Each team will have 20 table tennis balls placed in their own field.
- Each team can deploy any tactics or manoeuvres to grab or collect the table tennis balls from the tower and transfer them into the opponents field.
- If the table tennis ball is thrown outside the field, the ball will be put back to the side where the ball was thrown out from by the referee.

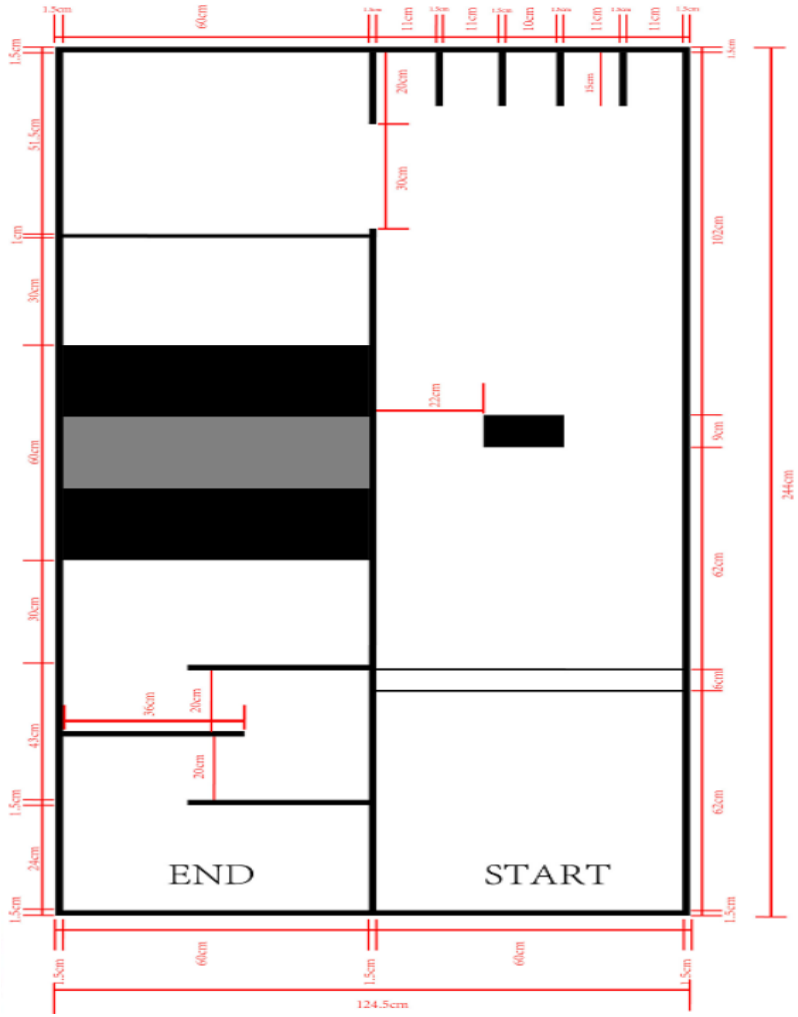
B4. VOLLEYBALL

❖ Win/Lose Criteria

- **Draw:** Both sides have equal number of balls thrown to the other side.
- **Win:** Team which has the most number of tennis balls thrown to the opponent's side or successfully thrown all tennis balls over to the opponent's side before the time ends.
- **Lose:** Team which has the least number of tennis balls thrown to the opponent's side or all team members removed from play due to foul or disqualification.

B5. HUMANOID

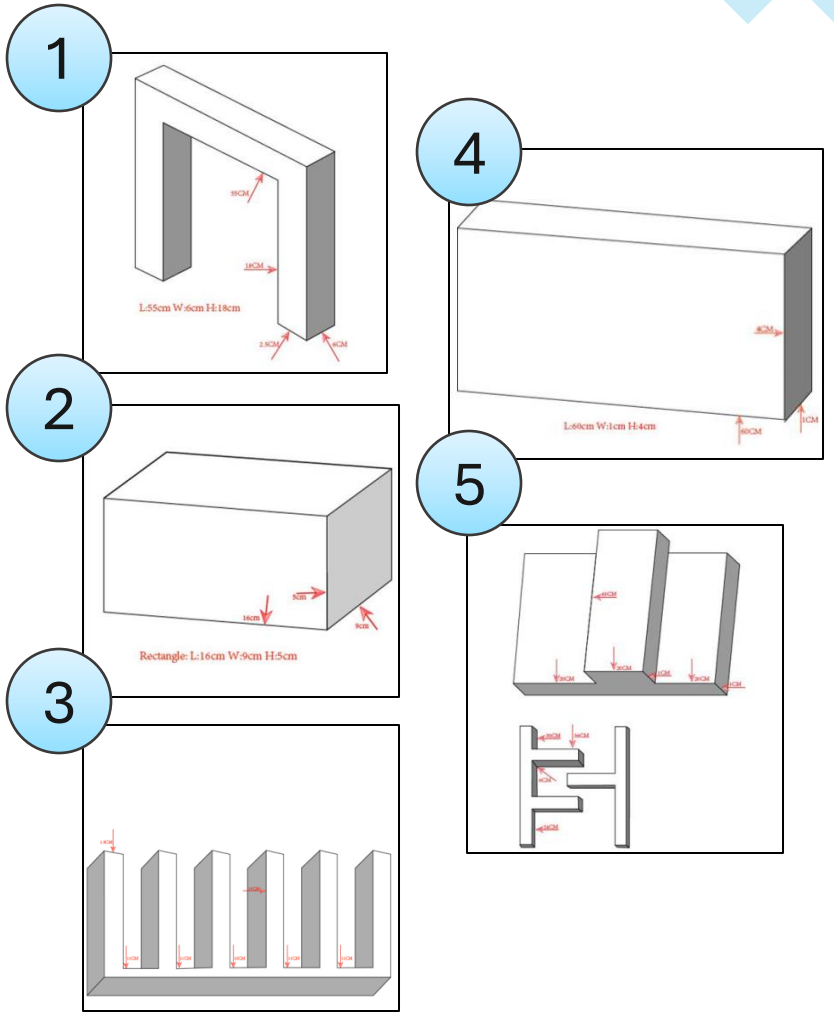
Age	9 - 18 years old
Participant	Individual
Robot Kits allowed	MRT LINE Core Humanoid
Robot Building	Pre-build LINE Core Humanoid
Mission	Control the Humanoid to complete missions
Game duration	5 minutes



B5. HUMANOID

Game rules

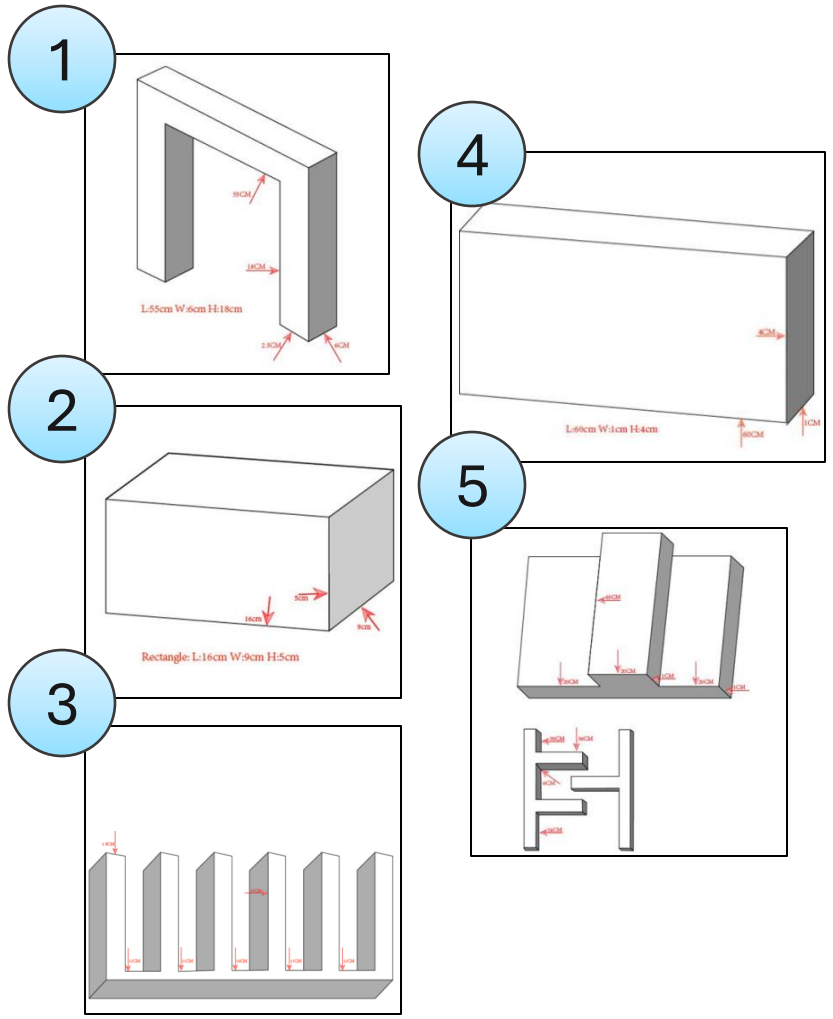
- ❖ **Mission:** Control a humanoid robot with an Android device to move from the starting point, complete assigned missions, and then return to a specific end point.
- **Mission 1:** Control robot to crawl under obstacles placed on the passage.
- **Mission 2:** Robot needs to use hand to carry the props and robot legs must cross the red line before dropping the props to designated area.
- **Mission 3:** Robot needs to use a foot to kick the soccer balls (there are 2 balls) in to the slot label (there are 5 slot labels).
- **Mission 4:** Robot need to cross above the obstacle placed in the passage.
- **Mission 5:** Robot can only walk through the two steps staircase and then walk through the Z-type route to reach the end.



B5. HUMANOID

❖ Scoring

- **Mission 1:** 20 points
- **Mission 2 :** 20 points
- **Mission 3:** 1st & 5th slot label: 16 points; 2nd & 4th slot label: : 18 points; 3rd slot label: 20 points
- **Mission 4:** 20 points
- **Mission 5:** Each stair: 5 points; Walk through the Z-type route to reach the end 10 points.



C. CREATIVE DESIGN

C1. FUTURE INNOVATOR

THEME: GREEN ENERGY

Age	6 - 18 years old
Participant	Team 2 – 5 Participants
Robot Kits allowed	MRT Series or Huna Science Class
Mission	Create a robot/system expressing the given theme

C1. FUTURE INNOVATOR

THEME: GREEN ENERGY

Project/robot requirements:.

- Size: There is no limitations to the size, amount of blocks and weight for the model.
- Models/ robots build must be autonomous.
- Other materials can be used such as camera, paper cups, rings, clips, sticks, bottles, 3D printed models, etc (keeping in mind that the main component needs to be products from MRT series or Huna Science Class).

Project Pre-registration:

- Sending to email: iyrcvn.info@gmail.com
- Deadline: Before 1st Dec, 2024
- 3 pictures: 1 picture of the project, 1 picture of the team, and 1 picture of all team members with their project.
- Video introducing your project for at least 1 minute to 3 minutes

C2. DESIGN GAME

THEME: GREEN ENERGY

Age	6 - 18 years old
Participant	Team 2 – 3 Participants
Robot Kits allowed	Game Maker Kit
Mission	Design a proper game based on the theme given and submit online.

C2. DESIGN GAME

Objective

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

Restrictions on Game design

- Only MRT Game Maker Kit is to be used to make game.
- Participants should make code at https://arcade.makecode.com.
- Participants should make sure that games work properly both at emulator of websites above and MRT Game Maker Kit.

C2. DESIGN GAME

Game Rules

•Participants shall make game code in advance.

•Each group has a presentation time of 3 minutes to introduce their games to the referee on the competition place. Presentations can be done in English. If they are unable to present in English, they have to prepare their own translator.

•Game kit and lab top may be displayed in the allocated table assigned to each group. Hence, Participants are required to ensure their game kit are taken care of during the display time to the public until the judging is completed.

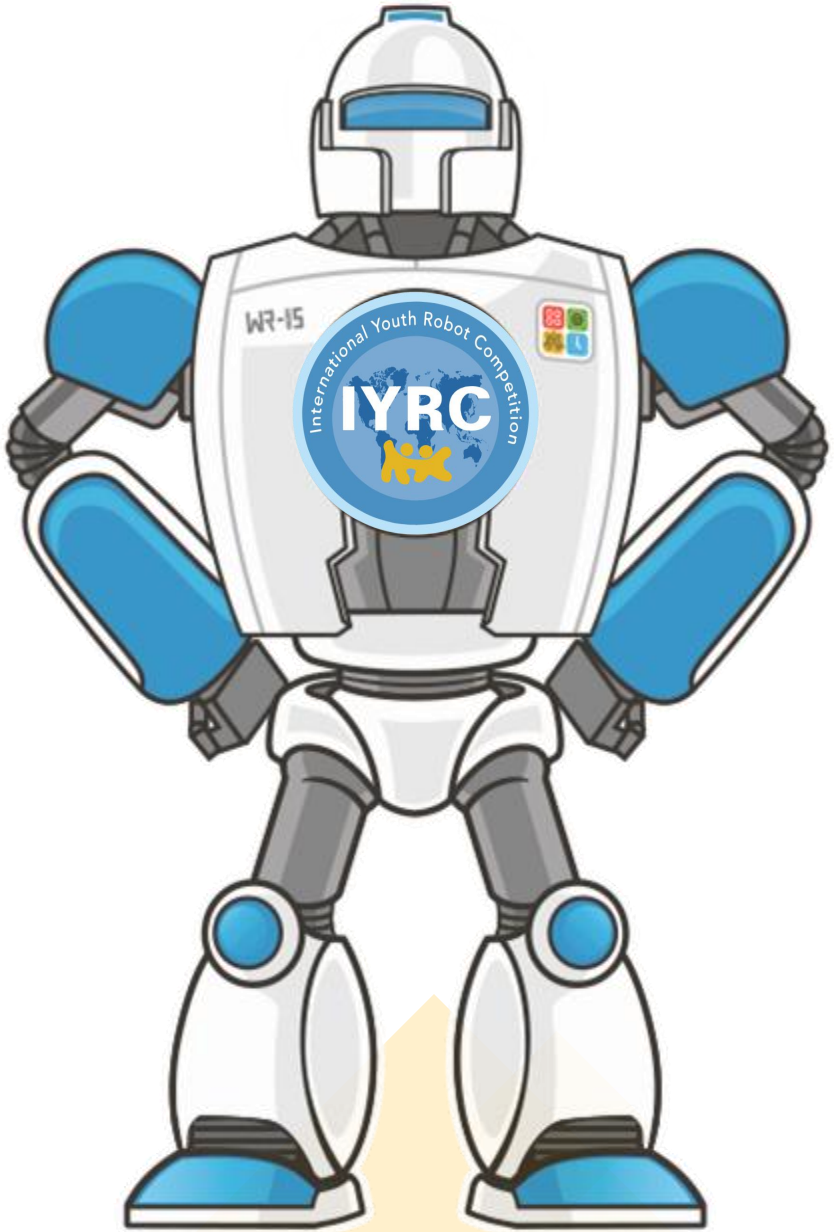
•After registration, a poster(presentation) form will be sent the teams by organizer, and participants need to fill the poster content. Besides, 4 copies of the printed Manual (Presentation File) in English are required for the display and referees review, it needs to include:

+ Game Name
+ Purpose
+ Team member introduction and task allocation
+ Introduction of the project
+ How to program (coding block captured)
+ How to play.

C2. DESIGN GAME

Scoring

- Referees will check if the team meets the requirements or not, and evaluate teams' works. Score will be given based on different criteria and weightage respectively:
  - Relevance to theme: 10 score
  - Creativity & Uniqueness: 30 score
  - Code Functionality: 30 score
  - Team work: 10 score
  - Presentation skill: 20 score
- Additional Points
  - When participants create their own Character/Background, they will get additional points up to 5 ~10 points.
  - When participants use more than 3 kinds of coding blocks, they will get additional points up to 5 ~10 points. e.g.) Loops, Logic, Music…
- Participating group with the highest score is the winner. If there are two or more groups with the same score, the lowest average younger participating group is the winner.



International Youth Robot Competition
IYRC

THANK YOU