



2024年IYRC国际青少年机器人竞赛（中国）邀请赛及数字化创意研学交流
2024 IYRC CHINA & DIGITAL CREATIVE STUDY TOUR
20/12 - 24/12 (5D 4N)

การแข่งขันหุ่นยนต์เยาวชนนานาชาติ 2024 ประเทศจีน และการทัศนศึกษา เรียนรู้วัฒนธรรม ดิจิทัลเชิงสร้างสรรค์
วันที่ 20-24 ธันวาคม พ.ศ.2567 (5 วัน 4 คืน)



ORGANISERS / 主办单位:



รายละเอียดของเมืองเจ้าภาพ

เซินเจิ้นตั้งอยู่ในมณฑลกว่างตุ้ง ติดกับฮ่องกง และมีพรมแดนติดกับเมืองตงกวนและฮุยโจว นอกจากนี้ยังเป็นเขตเศรษฐกิจพิเศษแห่งแรกของประเทศจีน ภูมิอากาศสบายๆ และทัศนียภาพของชายฝั่งและเทือกเขาที่กว้างไกลได้เปลี่ยนให้เซินเจิ้นเป็นจุดหมายในใจของนักท่องเที่ยว โดยเป็นจุดหมายห้ามพลาดอันดับที่ 31 ของโลก จากการจัดอันดับของ The New York Times ที่ยังเป็นศูนย์กลางขนส่งสาธารณะที่สำคัญสำหรับผู้เดินทางเข้าและออกจีนแผ่นดินใหญ่



เซินเจิ้นมีชายฝั่งยาว 271 กิโลเมตรให้นักท่องเที่ยวได้เลือกพักผ่อน ณ ชายหาดสวยสะอาดตา ไลฟ์สไตล์ของมหานครที่ดึงดูดใจ พร้อมด้วยที่เที่ยวเชิงวัฒนธรรม ความบันเทิง ห้างสรรพสินค้า ย่านร้านอาหาร แหล่งท่องเที่ยว สโมสรกอล์ฟ 15 แห่ง รวมถึงหนึ่งในสนามกอล์ฟที่ใหญ่ที่สุดในโลก สนุกสนานชั้นเลิศ ที่ทำให้เซินเจิ้นเป็นเมืองหลวงแห่งสวนสนุกของจีน

เมืองเซินเจิ้นถือได้ว่าเป็นเมืองแนวหน้าของการปฏิรูปและเปิดประเทศของจีนเป็นศูนย์กลางของนวัตกรรมและการเป็นผู้ประกอบการ เป็นเมืองต้นแบบสำหรับเขตเศรษฐกิจพิเศษและเป็นพื้นที่สาธิตล้ำหน้าของสังคมนิยม นอกจากนี้ยังเป็นหนึ่งในเมืองหลักของเขตอ่าวกว่างตุ้ง-ฮ่องกง-มาเก๊า ซึ่งได้รับการวางแผนและออกแบบจากประธานาธิบดีด้วยตัวเอง

เมืองกว่างโจว ซึ่งเป็นเมืองศูนย์กลางระดับประเทศ เป็นศูนย์กลางทางการค้าและลอจิสติกส์ของภาคใต้ของจีน รวมถึงเป็นศูนย์กลางการแลกเปลี่ยนระหว่างประเทศด้วย กวางโจวเป็นศูนย์กลางเศรษฐกิจและวัฒนธรรมที่สำคัญในเขตอ่าวกว่างตุ้ง-ฮ่องกง-มาเก๊า ซึ่งขับเคลื่อนให้เกิดนวัตกรรมทางเทคโนโลยีและการยกระดับอุตสาหกรรมในภูมิภาค ในฐานะที่เป็นจุดเริ่มต้นทางประวัติศาสตร์ของเส้นทางสายไหมทางทะเล กวางโจวได้รับการวางตำแหน่งให้เป็นเมืองแนวหน้าที่เปิดกว้างและเป็นศูนย์กลางการแลกเปลี่ยนระหว่างประเทศภายใต้ โครงการ Belt and Road Initiative (BRI) หรือโครงการเส้นทางสายไหมแห่งศตวรรษที่ 21 คือยุทธศาสตร์หลักของจีนในการขยายอิทธิพลบนเวทีโลกผ่านการเชื่อมโยงเส้นทางคมนาคมขนส่งกับนานาประเทศ โดยส่งเสริมความร่วมมือและการพัฒนาในและนอกภูมิภาคผ่านความสัมพันธ์ทางเศรษฐกิจ การค้า และการแลกเปลี่ยนทางวัฒนธรรมที่เข้มแข็งขึ้นกับประเทศต่าง ๆ ที่อยู่ตามเส้นทาง

กำหนดการ 20-24 ธันวาคม 2567

วันที่	สถานที่	กำหนดการ/การเดินทาง	อาหาร	ที่พัก
DAY 1 20 ธ.ค. 2567 (ศุกร์)	เดินทางถึงสนามบินเซินเจิ้น	เดินทางถึงที่พัก เช็คอินที่พัก เตรียมพร้อมการแข่งขัน	อาหารเย็น	โรงแรม 4 ดาว
DAY 2 21 ธ.ค. 2567 (เสาร์)	มหาวิทยาลัยเซินเจิ้น MSU-BIT	IYRC CHINA 2024 เช้า พิธีเปิด บ่าย การแข่งขันหุ่นยนต์	อาหารเช้า อาหารกลางวัน อาหารเย็น	โรงแรม 4 ดาว
DAY 3 22 ธ.ค. 2567 (อาทิตย์)	มหาวิทยาลัยเซินเจิ้น MSU-BIT	IYRC CHINA 2024 เช้า การแข่งขันหุ่นยนต์ บ่าย การแข่งขันหุ่นยนต์	อาหารเช้า อาหารกลางวัน อาหารเย็น	โรงแรม 4 ดาว
DAY 4 23 ธ.ค. 2567 (จันทร์)	การศึกษาเกี่ยวกับ ประวัติศาสตร์ของกวาง โจวและการสัมผัส ประสบการณ์ที่สวนสนุก	ทัศนศึกษา เช้า พิพิธภัณฑ์กวางโจว บ่าย สวนสนุก Chimelong Paradise	อาหารเช้า อาหารกลางวัน อาหารเย็น	โรงแรม 4 ดาว
DAY 5 24 ธ.ค. 2567 (อังคาร)	เยี่ยมชมบริษัท เทคโนโลยีและศึกษาการ เปิดเสรีเมืองเซินเจิ้น	ทัศนศึกษา เช้า เยี่ยมชมบริษัท BYD ชมรถ SkyRail บ่าย นิทรรศการ The Rise of the Pearl River เย็น เดินทางสู่สนามบิน กลับประเทศไทย	อาหารเช้า อาหารกลางวัน	



Day 1

วันที่ 20 ธันวาคม 2567

เช้า 9:00 นาฬิกา นัดพบที่สนามบินสุวรรณภูมิ

เที่ยง 12:10 นาฬิกา เดินทางจากสนามบินด้วยสายการบินไชน่าเซาท์เทิร์นแอร์ไลน์ เที่ยวบิน CZ8076

บ่าย 15:40 นาฬิกา สู่ท่าอากาศยานนานาชาติเซินเจิ้น, เป้าอัน

สนามบินนานาชาติเซินเจิ้นเป้าอัน ตั้งอยู่ในมณฑลทกวางตุ้ง ประเทศจีน เป็นศูนย์กลางการบินระหว่างประเทศที่สำคัญ สนามบินมีอาคารผู้โดยสารสามแห่งและให้บริการเที่ยวบินไปยังจุดหมายปลายทางทั่วโลก เชื่อมโยงทั้งเอเชีย ยุโรป อเมริกา และอื่นๆ ในฐานะศูนย์กลางการคมนาคมที่สำคัญของภาคใต้ของจีน สนามบินเซินเจิ้นมีชื่อเสียงในด้านสิ่งอำนวยความสะดวกที่ทันสมัยและการเชื่อมต่อการขนส่งที่สะดวกสบาย





IYRC CHINA 2024

International Invitation Competition

IYRC 国际青少年机器人竞赛（中国）国际邀请赛



Date : 21 - 22 Dec 2024

Venue : Shenzhen MSU-BIT University
深圳北理莫斯科大学



科技游学+竞赛, 等你来挑战!

ORGANISERS 主办单位:



my robot time



BEIJING WANGZHI HUAXIA EDUCATION
TECHNOLOGY RESEARCH INSTITUTE
北京网智华夏教育科技有限公司

Tech Tour + Competition, Waiting for you to take on the challenge!



Day 2 & Day 3 วันที่ 21-22 ธันวาคม 2567

ผู้แข่งขันเข้าร่วมการแข่งขันหุ่นยนต์ IYRC CHINA 2024 สถานที่จัดมหาวิทยาลัยเซินเจิ้น

MSU-BIT (Shenzhen MSU-BIT University) เป็นมหาวิทยาลัยความร่วมมือระหว่างจีนและต่างประเทศ ก่อตั้งขึ้นโดยสถาบันเทคโนโลยีปักกิ่งและมหาวิทยาลัยรัฐมอสโกโกลโมโนซอฟ ตั้งอยู่ในเมืองเซินเจิ้น ประเทศจีน มหาวิทยาลัยเปิดสอนหลักสูตรระดับปริญญาตรี ปริญญาโท และปริญญาเอกในหลากหลายสาขา เช่น วิทยาศาสตร์ วิศวกรรมศาสตร์ มนุษยศาสตร์ และสังคมศาสตร์ โดยมีเป้าหมายเพื่อพัฒนาบุคลากรที่มีคุณภาพสูงและมีมุมมองในระดับสากล



Day 4

วันที่ 23 ธันวาคม 2567

เช้า ทศนศึกษาเชิงประวัติศาสตร์ชาติจีนที่พิพิธภัณฑ์กวางโจว ตั้งอยู่ในเขตเทียนเหอ เมืองกวางโจว พิพิธภัณฑ์มณฑลกวางตุ้ง เป็นพิพิธภัณฑ์ระดับมณฑลเพียงแห่งเดียวในกวางตุ้ง ในฐานะพิพิธภัณฑ์ระดับชาติชั้นหนึ่ง พิพิธภัณฑ์นี้นำเสนอการผสมผสานที่ลงตัวระหว่างการศึกษ วัฒนธรรม และศิลปะ โดยเป็นเวทีที่ยอดเยี่ยมสำหรับการสำรวจประวัติศาสตร์และวัฒนธรรมของมณฑลกวางตุ้งและของจีน



บ่าย สนุกสุดเหวี่ยงกันเลย ที่สวนสนุก Chimelong Paradise

สวนสนุกระดับโลกที่พัฒนาโดย Chimelong Group ครอบคลุมพื้นที่กว่า 1,000 เอเคอร์ พร้อมด้วยเครื่องเล่นที่ทันสมัยกว่า 70 ชนิด เช่น รถไฟเหาะแนวตั้ง เครื่องเล่นลูกตุ้มยักษ์ และหอคอยดิงพสุธา นอกจากนี้ยังมีโซนธีม 6 โซน เช่น การผจญภัยในป่าและงานคาร์นิวัล รองรับผู้เข้าชมทุกวัยด้วยเครื่องเล่นและการแสดงที่หลากหลาย.



Day 5

วันที่ 24 ธันวาคม 2567

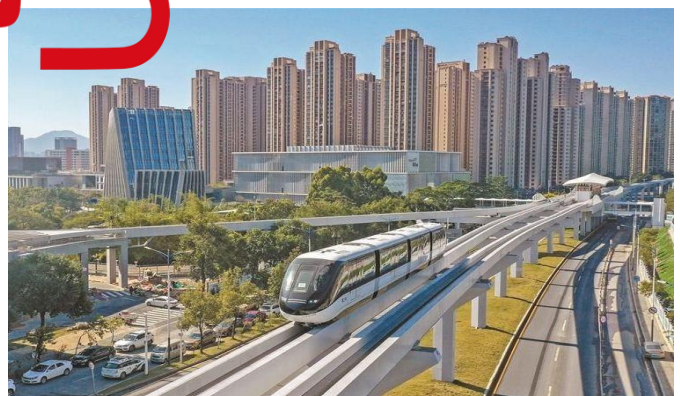
เช้า เยี่ยมชมบริษัทยักษ์ใหญ่ด้านรถไฟฟ้าของจีน BYD SkyRail เป็นระบบขนส่งสามมิติที่ล้ำสมัย มีทางเดินรถที่เป็นอิสระ พัฒนาขึ้นเป็นเวลากว่าเจ็ดปีด้วยเงินลงทุนกว่า 10,000 ล้านบาท ระบบขนส่งสี่เขี้ยวนี้เข้ามาเติมเต็มช่องว่างในระบบขนส่งทางรางขนาดเล็กของจีน โดยผสมผสานเทคโนโลยีล้ำสมัยระดับโลกเพื่อสร้างแนวทางด้านขนส่งในเมืองแห่งอนาคต

เปิดตัวครั้งแรกในปี 2021 ที่ซีซาน โครงการ SkyRail ไร้คนขับแห่งแรกของโลกได้รับรางวัล "China Steel Structure Gold Award" ในปี 2022 ซึ่งออกแบบโดยวูล์ฟกัง เอกเกอร์ ตัวรถได้รับการออกแบบให้ผสมผสานลวดลายมังกรจีนแบบดั้งเดิมเข้ากับ ความเรียบง่ายสมัยใหม่ ทำให้มีรูปลักษณ์ที่ดูทันสมัย

SkyRail เป็นหนึ่งในแนวทางการขนส่งสี่เขี้ยวที่สำคัญของ BYD โดยช่วยลดการจราจรที่หนาแน่น เพิ่มประสิทธิภาพการขนส่งในเมือง และมีบทบาทสำคัญในการสร้างเมืองสมัยใหม่ที่เน้นระบบรางและโดดเด่นด้วยหลักการ "สี่สูงสองต่ำ" คือ ความปลอดภัยสูง ความอัจฉริยะสูง การปรับตัวสูง ความงดงามสูง และมีต้นทุนต่ำ เสียงรบกวนต่ำ SkyRail ยังเชื่อมต่อกับศูนย์กลางการคมนาคมขนาดใหญ่ โดยบูรณาการและผสมผสานการทำงานกับระบบรถไฟฟ้าใต้ดินที่มีอยู่ได้อย่างไร้รอยต่อ



BYD



ป้าย เทียวชม นิทรรศการ The Rise of the Pearl River

นิทรรศการนี้ตั้งอยู่ในเขตฝูเถียน เมืองเซินเจิ้น เพื่อเฉลิมฉลองครบรอบ 40 ปีของการปฏิรูปและเปิดประเทศของมณฑล กวางตุ้ง โดยจัดแสดงการตัดสินใจสำคัญ ความก้าวหน้าที่เกิดขึ้น และเส้นทางการพัฒนาที่โดดเด่นของมณฑล



เย็น เดินทางสู่ท่าอากาศยานนานาชาติเซินเจิ้น,เป่าอัน กลับสู่ประเทศไทย ด้วยสายการบินไชน่าเซาท์เทิร์นแอร์ไลน์ เที่ยวบิน CZ8323 ออกเดินทางเวลา 16:05 นาฬิกา ถึงประเทศไทยเวลา 18:15 นาฬิกา โดยสวัสดิภาพ



ประเภทการแข่งขันใน IYRC CHINA 2024

ประเภทการแข่งขันใน IYRC CHINA 2024 แยกตามกลุ่มอายุและการแข่งขันได้ดังนี้:

ระดับอนุบาล (อายุ 4-6 ปี)

1. Safari Adventure** (IYRC Most Popular Game)
2. Basketball** (IYRC Historical Classic Game)
3. Creative Design**

ระดับประถมศึกษา (อายุ 7-9 ปี)

1. Safari Adventure** (IYRC Most Popular Game)
2. Basketball** (IYRC Historical Classic Game)
3. Communication Master II** (CodeSpark I series product)

ระดับประถมศึกษา (อายุ 7-12 ปี)

1. Creative Design**
2. Volleyball**
3. Space Explorer** (OpenHarmony Humanoid Challenge)
4. Strait Crossing Challenge** (Drone Competition)
5. Wandering Planet II** (CodeSpark II series product)

ระดับมัธยมศึกษา (อายุ 13-18 ปี)

1. Creative Design**
2. Volleyball**
3. Space Explorer** (OpenHarmony Humanoid Challenge)
4. Strait Crossing Challenge** (Drone Competition)
5. Wandering Planet II** (CodeSpark II series product)

การแบ่งกลุ่มนี้ช่วยให้ผู้เข้าร่วมสามารถแข่งขันในระดับที่เหมาะสมกับอายุและทักษะของตนเอง.



IYRC CHINA (Shenzhen) 2024

RnR change log

Version	Details
1.0	- Identify the competition categories and competition type
2.0	- Update the details for competition communication master II - Change the competition duration of wandering planet II
2.1	- Update the task for safari adventure



1. Scope of Participation

- a. **Competition Categories:**
 - i. Kinder (4 to 6 years old)
 - ii. Elementary school grade 1-3 (7 to 9 years old)
- b. **Number of Participants** : Individual
- c. **Competition Type** : Task Completion

2. Competition Process

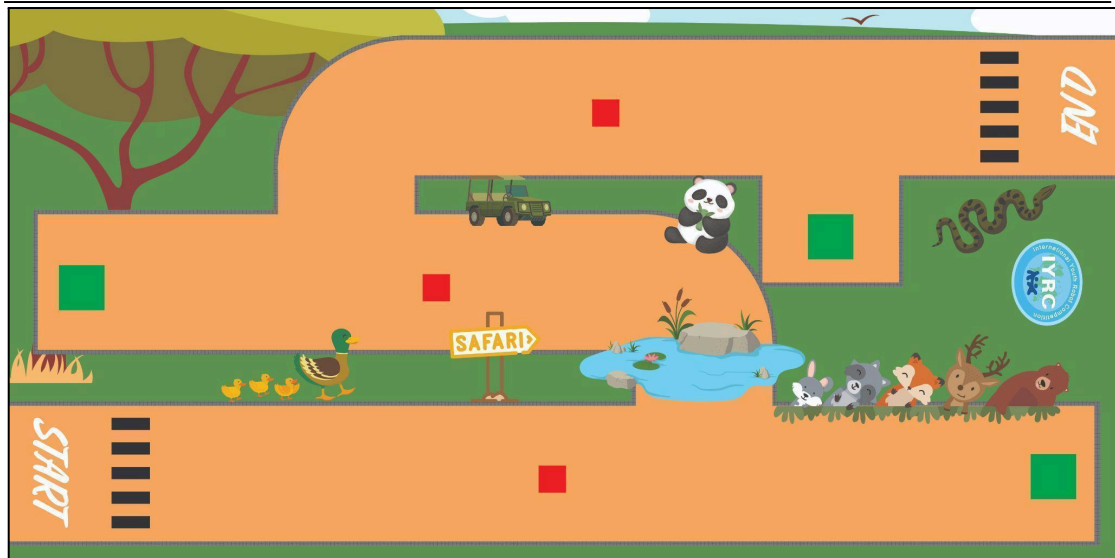
- a. **Competition Registration:** Participants should register for the competition following the guidelines and schedule provided by the organizing committee. Successfully registered participants will be granted the qualification to participate in the competition.

3. Competition Theme

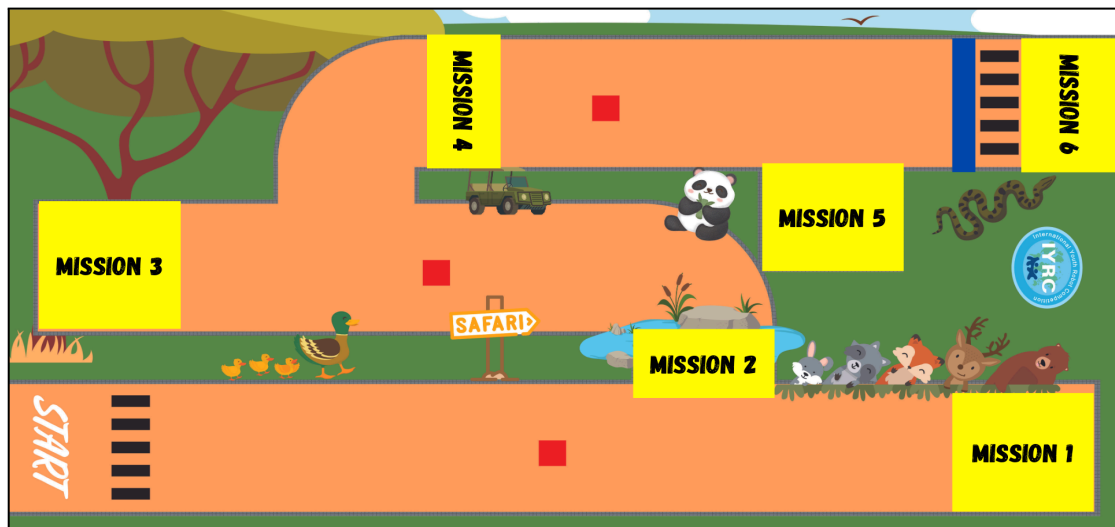
Students are required to maneuver their robot, a buggy car, to facilitate visitors in exploring the zoo and learning about the various animals in the safari. Throughout the tour, students must navigate obstacles on the path and relocate them to designated areas to accomplish their mission.

4. Competition Environment

- a. Participants must bring their own pre-assembled remote control robots to the competition and ensure they are fully charged. Spare batteries are allowed.
- b. Forbidden devices: USB flash drives, mobile phones, tablets, walkie-talkies, etc.
- c. The participating robots must not pose any danger to the field or the surrounding environment.
- d. Competition game field:



Original Game Map



Position of the mission

- i. Game field size : 244cm (L) X 122cm (W)
- ii. The robot's starting position (START) is behind the zebra crossing, and its body structure must not extend beyond the zebra crossing.
- iii. When the robot reaches the endpoint area (END), its entire body structure must be above or have crossed the zebra crossing and be in a stationary position.
- iv. The red box indicates the position of the dice. The blue line marks the position of the arched door.



5. Robot Requirements

- a. Each participant is allowed one remote control robot.
- b. **Mainboard:** Only 1 mainboard is allowed during the competition. The robot must use a series of control boards that can complete the competition.
- c. **Motors:** The robot is allowed to use a maximum of 2 DC motors.
- d. **Dimensions:** The maximum size of the robot must not exceed 20cm x 20cm x 20cm.
- e. **Remote control:** The robot must be controlled only using a Bluetooth remote controller or RF controller. Participants may use their own remote control or the one provided by the organizer.
- f. **Power Supply:** The fully charged voltage of each robot's battery must not exceed 9V.

6. Competition Task

A. Task Overview

The remote control robot starts from the starting point, completes all the tasks involving clearing the obstacles, activates the generator, passes through the gate, and reaches the finish line.

B. **Competition Duration:** 150 seconds per game

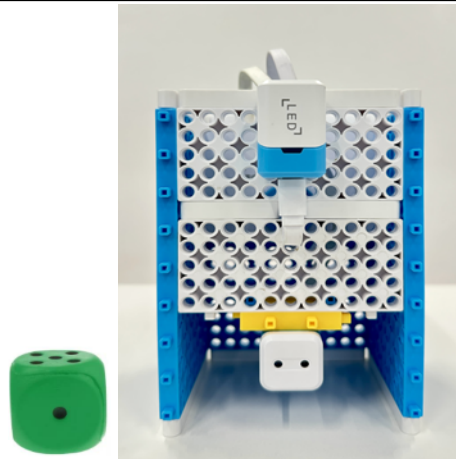

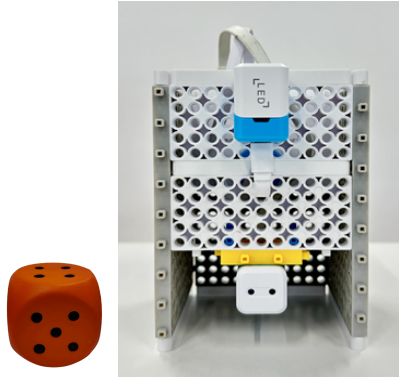
C. Mission:

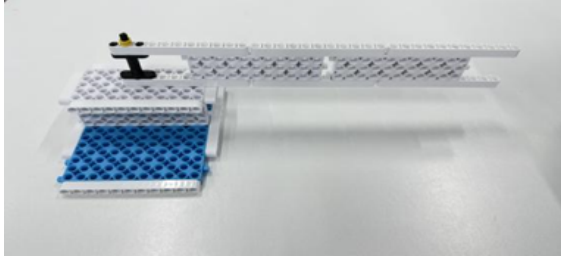
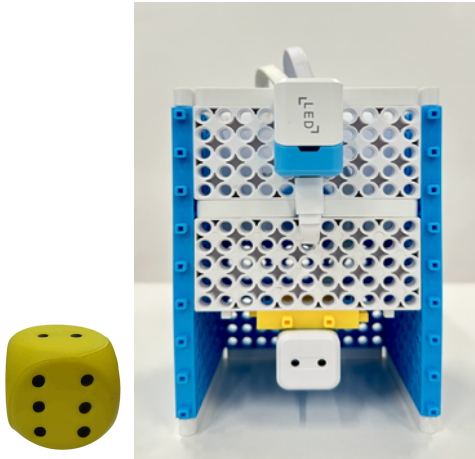

- i. **Mission 1:** From the starting position (before the zebra crossing), a buggy car starts to move and pushes the bush (green dice) in the middle of the road to the first station, waiting until the red LED turns off and green LED lights up.
- ii. **Mission 2:** The buggy car will need to cross over a bridge which has seesaw geometry.
- iii. **Mission 3:** The buggy car pushes the rock (Oren dice) in the middle of the road to the second station, waits until the red LED turns off and green LED lights up.
- iv. **Mission 4:** The buggy car will need to turn on the generator.
- v. **Mission 5:** The buggy car pushes the wooden box (yellow dice) in the middle of the road to the third station, waits for the red LED turns off

and green LED lights up.

- vi. **Mission 6:** Robot passes through the arched door completely and stops at the ending zone (after the zebra crossing).

D. Items to be used:

Items to be used in missions	
<p>Mission 1 Push the bush into the station 1 Green LED will light up indicate success</p>	 <p>The size of the dice is 6cm x 6cm x 6cm</p>
<p>Mission 2 Cross over a seesaw bridge</p>	 <p>The size of board is 40cm x 32cm</p>
<p>Mission 3 Push the rock into the station 2 Green LED will light up indicate success</p>	 <p>The size of the dice is 6cm x 6cm x 6cm</p>

<p>Mission 4 Turn on the generator</p>	
<p>Mission 5 Push the wooden box into the station 3 Green LED will light up.</p>	 <p>The size of the dice is 6cm x 6cm x 6cm</p>
<p>Mission 6 Robot passes through the arched door completely and stops at the ending zone (after the zebra crossing)</p>	

7. Robot operation and Completion

A. Robot Operation

- i. The remote must remain within the START area during the competition, and its body structure must not extend beyond the zebra crossing. At the start of the competition, the robot may be activated by pressing a button.
- ii. The tasks must be completed within the specified time without pauses or retries.



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- iii. For Mission 2 , if the seesaw cannot be crossed, participants may bypass it by going directly through the left side of the seesaw and continue with subsequent tasks. However, this task point of mission 2 will be 0.
- iv. If issues arise with the venue equipment, such as lights not functioning or the gate not opening, the referee will coordinate and address the situation on-site.
- v. During the competition, the robot cannot be replaced, and no changes can be made to the robot's hardware or software.
- vi. Participants are not allowed to touch or handle the off-road vehicle, including repairing any dropped or damaged parts.

B. Ending

- i. End of Specified Time: The competition ends when the allotted time expires.
- ii. Reaching the Endpoint: The robot must reach the endpoint area.
- iii. Inactivity: If the robot remains stationary for 10 seconds during its movement, it may be considered non-functional.
- iv. Referee Judgment: The competition cannot proceed due to situations like the robot tipping over or flipping.
- v. Run away from the brown track: If the robot runs away from the brown track, (except for mission 2 if bypassed).
- vi. Robot Structure Detachment: The entire body structure of the robot detaches from the competition field during movement.

8. Scoring

A. Score for each mission

<p style="text-align: center;">Mission 1</p> <p style="text-align: center;">Push the bush into the station 1 Green LED will light up indicate success</p>	10 points
<p style="text-align: center;">Mission 2</p> <p style="text-align: center;">Cross over a seesaw bridge</p>	20 points
<p style="text-align: center;">Mission 3</p> <p style="text-align: center;">Push the rock into the station 2 Green LED will light up indicate success</p>	20 points



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Mission 4 Turn on the generator	20 points
Mission 5 Push the wooden box into the station 3 Green LED will light up	20 points
Mission 6 Robot passes through the arched door completely and stops at the ending zone (after the zebra crossing)	20 points

B. Scoring Calculation

- i. If only part of the tasks are completed within the specified task duration, scores will be based on the tasks actually completed.
- ii. Higher scores rank higher. If scores are the same, the one with less time ranks higher.
- iii. If both scores and completion times are the same, the result will be considered a tie.

C. Disqualification

- i. Participants were later than 10 minutes.
- ii. Participants intentionally damage the competition field.
- iii. Participants not following the referee's (or judge's) instructions.
- iv. Participants received a score of zero.
- v. Participants being found guilty of valid complaints.
- vi. Robots not meeting the size requirements.

9. Evaluation criteria

These rules are the basis for the implementation of refereeing work, and referees (judges) have the final authority to make decisions during the competition. Any matters not stated in the rules shall be decided by the referee team.

IYRC · Basketball

1. Scope of Participation

a. **Competition Categories:**

- i. Kinder (4 to 6 years old)
- ii. Elementary school grade 1-3 (7 to 9 years old)

b. **Number of Participants** : Individual

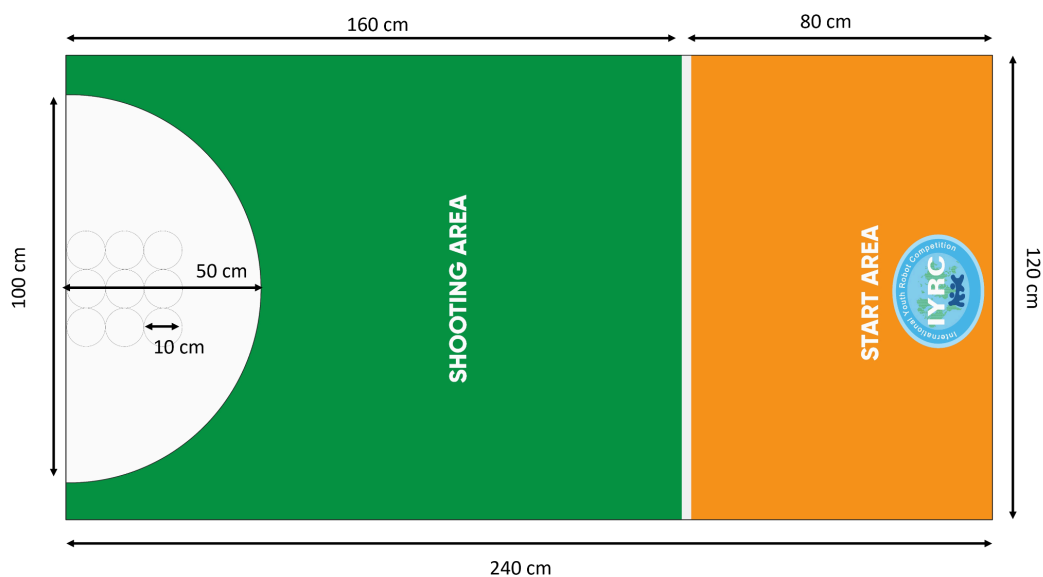
c. **Competition Type** : On-site card swiping and Task Completion

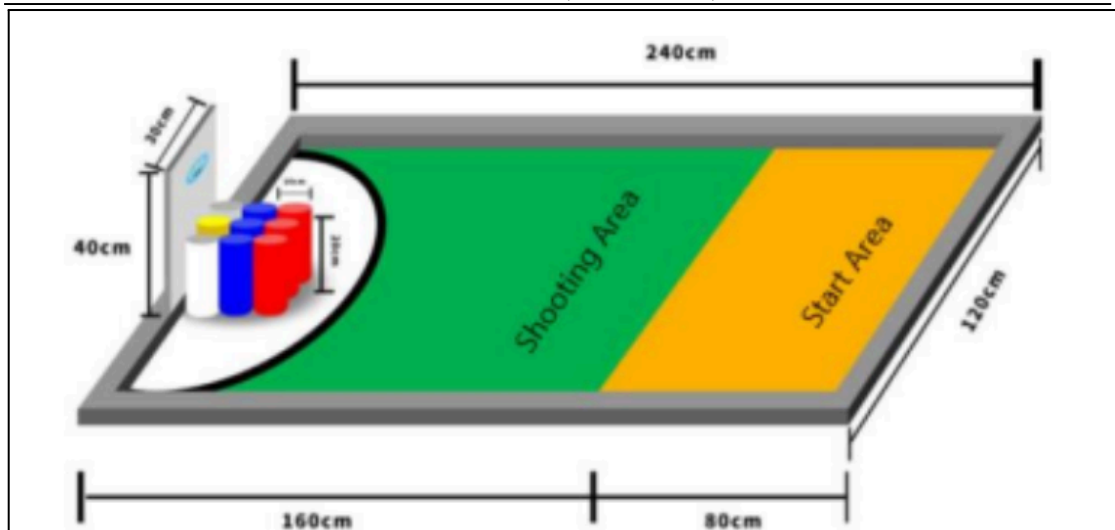
2. Competition Process

- a. **Competition Registration:** Participants should register for the competition following the guidelines and schedule provided by the organizing committee. Successfully registered participants will be granted the qualification to participate in the competition.

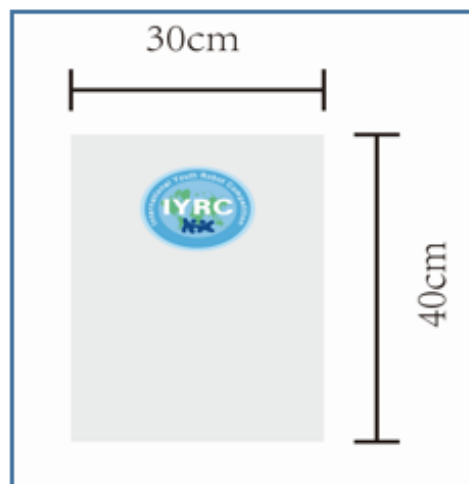
3. Competition Environment

- a. Participants must bring their own pre-assembled basketball robot to the competition and ensure they are fully charged. Spare batteries are allowed.
- b. Forbidden devices: USB flash drives, mobile phones, tablets, walkie-talkies, etc.
- c. The participating robots must not pose any danger to the field or the surrounding environment.
- d. Competition game field:





Position of the color basket



Backboard (Located behind the cylinder basket)

- i. Game field size : 240cm (L) X 120cm (W)
- ii. Starting area : 80cm (L) X 120cm (W)
- iii. The basketball hoop consists of a 30 cm x 30 cm square frame, evenly distributed with 9 cylindrical baskets, each with a diameter of 10cm and a height of 20 cm. The backboard that holds the baskets has a height of 40 cm and a width of 30 cm. The entire structure is placed on the ground.



4. Robot Requirements

- a. Each participant is allowed one basketball robot.
- b. **Mainboard:** Only 1 Brain A series mainboard is allowed during the competition.
- c. **Motors:** The robot is allowed to use a maximum of 2 DC motors.
- d. **Dimensions:** The maximum size of the robot must not exceed 30cm x 30cm x 30cm.
- e. **Power Supply:** The fully charged voltage of each robot's battery must not exceed 9V.

5. Competition Task

A. Task Overview

Group	On-side card swiping	Competition Duration	Round
Kinder	30 minutes	150 seconds	1
Elementary School	30 minutes	150 seconds	1

1. After participants bring their robot into the venue, they will reset their programs according to the referee's instructions or as directed by the on-site staff.
2. Once all participants have reset their programs, on-site programming and testing will begin (participants must bring their own card readers and cards). The on-site programming and testing duration is the time during which all teams in each group will simultaneously program and test their robots.
3. Task Duration: The robot must complete all tasks within the specified time. If not all tasks are completed within the allotted time, the score will be based on the tasks that were completed.



6. Robot operation and Completion

A. Robot Operation

- i. The competition officially begins with the sound of the referee's whistle.
- ii. The robot starts from the start area carrying a ping pong ball, moves to the shooting area, and attempts to shoot the ping pong ball into the basket.
- iii. Place the robot with the ping pong ball in the starting area. Once the whistle is blown, the participant can activate the robot by pressing the touch sensor.
- iv. After pressing the sensor, the robot must independently move to the shooting area, shoot the ping pong ball into the basket, and then return to the starting area. The participant can then place another ball and repeat the process until the match time ends.
- v. While shooting, the robot must be completely within the shooting area, and when loading the ball, it must be entirely within the starting area, or it will be considered a foul.
- vi. At the end of the match, the referee will check the basket. Each ball successfully shot into the basket will be counted as a valid score.
- vii. The robot can only carry one ball at a time to the shooting area and attempt a shot. After returning to the starting area, the participant may manually place a ping pong ball onto the robot.
- viii. If the robot does not fully return to the starting area, the participant may manually move the robot back, but a 1-point penalty will be applied. However, if the robot is completely within the starting area, the participant can manually adjust the robot's position without penalty.

B. Ending

- i. End of Specified Time: The competition ends when the allotted time expires.
- ii. Inactivity: If the robot remains stationary for 10 seconds during its movement, it may be considered non-functional.



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- iii. Referee Judgment: The competition cannot proceed due to situations like the robot tipping over or flipping.
- iv. Robot Structure Detachment: The entire body structure of the robot detaches from the competition field during movement.

7. Scoring

A. Score for each color basket

Red Basket	Blue basket	White basket	Yellow basket
1 point	2 points	3 points	5 points

B. Scoring Calculation

- i. Participants with the highest score will win the game.
- ii. If scores are tied, the ranking will be determined by the number of higher-value balls scored. If all high-value balls have the same score, the result will be considered a tie.

C. Disqualification

- i. The use of wireless communication, remote control, or wired control systems to operate the robot is prohibited.
- ii. The robot intentionally damages the competition field.
- iii. The robot violates the size restrictions.

8. Evaluation criteria

These rules are the basis for the implementation of refereeing work, and referees (judges) have the final authority to make decisions during the competition. Any matters not stated in the rules shall be decided by the referee team.

IYRC · Communication Master II

1. Scope of participation

- a. **Competition Categories :**
 - i. Elementary school grade (7 to 12 years old)
- b. **Number of Participants :** Individual
- c. **Competition Type :** Task Challenge

2. Competition Theme

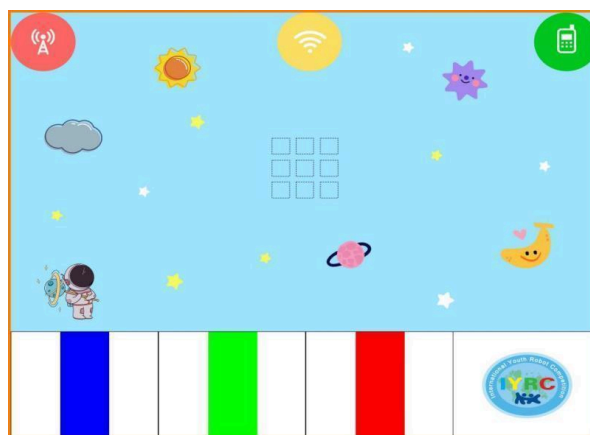
Communication Master II

3. Competition Process

Competition registration: Participants must register according to the specified method and time. Only those who successfully register will be eligible to participate in the competition.

4. Competition Environment

- a. Operating system: Remote control+CodeSpark—Swipe card programming.
- b. Forbidden devices: USB flash drives, mobile phones, tablets, walkie-talkies, etc.
- c. Competition game field:



- i. The total size of the field is approximately 110cm in length × 90cm in width (±5%). Three circles with a diameter of 150mm are arranged side by side at the top of the field, with the task block placement area in the center.



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- ii. At the bottom of the field there are four rectangles boxes, each measuring 250mm in length and 200mm in width. The rectangle marked with the IYRC-LOGO serves as the starting point.
- iii. The task blocks are building blocks, with dimensions of approximately 47mm(L) X 47mm(W) and 40mm(H).

5. Robot Requirements

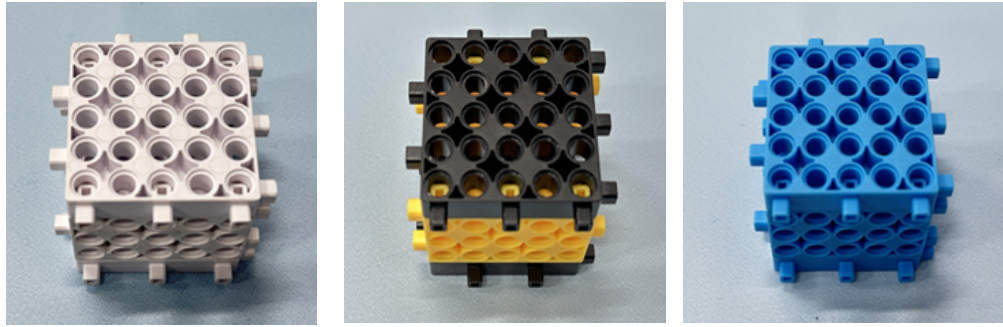
- a. Each participant is allowed one swipe card programmable robot that can be remote-controlled.
- b. Robot dimension must be within 180mm(L) X 150mm(W).
- c. Controller: Required with a 1.5-2 inch screen, built-in battery, TYPE-C input/output ports, supports voice control, remote control operation and is able to connect an external card reader.
- d. Robot is limited to using only one card reader, which can store up to 3 programs and one remote controller.
- e. The main structure is constructed using six sided blocks.
- f. Motor power: A maximum of 2 motors can be used, the robot's battery voltage must not exceed 9V.

6. Competition Rules

A. Task overview

The robot is placed at the starting point (rectangle box with IYRC-LOGO). Participants need to use card programming with a color sensor to move the robot into the specified color rectangle box (the robot's body must come to a complete stop within the rectangle box). The mainboard will light up the corresponding color LED strip (red color lights up the red LED strip, green color lights up the green LED strip, blue color lights up the blue LED strip).

Next, using the remote control, the participant must transport 9 blocks of different colors (three colors: white, yellow, and blue, with 3 blocks of each color) to their designated color circles. Finally, the robot must return to the starting point, and no further tasks will be carried out, signaling the end of the competition. (Task blocks are shown in the diagram below.)



B. Task decomposition:

i. Card Programming Section:

Participants use swipe card programming to have the robot move into the designated color rectangle block using a color sensor (the robot must come to a complete stop within the rectangle box). The mainboard will then light up the corresponding color LED strip for 3 seconds or more (red box lights up the red LED strip, green box lights up the green LED strip, blue box lights up the blue LED strip). The color of the block will be announced on-site by the judges. If the section fails, the robot must be returned to the starting point to begin the remote control section, with the timer continuing to run. (If the robot uses any other movement method, prior approval from the judges is required.)

ii. Remote Control Section:

Participants use remote control to maneuver the robot out of the box and transport the 9 different colored blocks from the field to their designated color circles (white blocks to the red circle, yellow blocks to the yellow circle, and blue blocks to the blue circle). Each block correctly placed in the designated color circle scores 10 points (the block's vertical projection must be entirely within the circle). Each block placed in a non-designated color circle results in a deduction of 10 points (if the block touches the circle). After the robot finishes transporting the blocks, it returns to the starting point, earning an additional 10 points (the robot must have at least half of its body inside the starting point).

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If any block completely leaves the field during transportation, it cannot be returned to the field. The scoring for the blocks will be based on their final positions after the task is completed.

iii. Program Card:

Programming cards include motion type cards, condition type cards, color type cards, etc. Participants need to upload the correct program to the mainboard according to the competition requirements to achieve the competition objectives.



C. Task announcement:

- i. The position of task blocks will be announced by the judges on-site.
- ii. The score varies depending on which circle the robot places the blocks into.
- iii. The color of the designated rectangle box that the robot must move to will be announced by the judges on-site.

D. Time and Frequency:

Category	On-site programming and debugging duration	Specified task duration	Specified task count
Elementary School	30 minutes	100 seconds	1 time
<ol style="list-style-type: none"> 1. On-site programming and debugging duration: During this time, all teams will collectively engage in programming and debugging. 2. Specified task duration: The robot must complete all tasks within the specified time. If not all tasks are completed within the allotted time, the score will be based on the tasks that were successfully completed. 			



7. Robot operating and ending

A. Robot operation:

- i. Robot startup and operation: The robot must remain stationary before starting from the starting point and its overall projection must not extend beyond the starting point's boundary. Once the robot is started, participants must not touch the robot before the end of the competition (except when switching from automatic to manual mode within the boundary).
- ii. No pauses are allowed within the specified time for task completion.
- iii. During the specified time for task completion, if the participating robot experiences a structural detachment, the participant may request the judge's assistance to retrieve the detached parts, provided it does not affect the robot's normal operation.
- iv. During the competition, the robot cannot be replaced and no modifications to the robot's hardware or software are allowed.

B. End:

- i. Complete all tasks within the specified time.
- ii. Time is up.
- iii. During the robot's operation, if the participant touches any part of the robot.
- iv. If the robot completely leaves the field during the remote control section.

8. Scoring

A. Scoring explanation:

Scoring criteria	Scoring explanation
The robot automatically moves to the designated color rectangle box (the robot's body must come to a complete stop within the rectangle box).	20 points
The robot moves to the designated color rectangle box using non-automatic methods	3 points



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(the robot's body must come to a complete stop within the rectangle box).	
The mainboard lights up the corresponding color LED strip for 3 seconds or more while the robot is completely within the color rectangle box.	10 points
Transporting three white blocks to the red circle.	10 points/each
Transporting three blue blocks to the blue circle.	10 points/ each
Transporting three yellow blocks to the yellow circle.	10 points/each
Transporting a block to a non-corresponding color circle.	-10 points/each
The robot returns to the starting point (with at least half of its body within the starting point).	10 points

B. Scoring calculation:

- i. If only part of the tasks are completed within the specified task duration, the score will be based on the actual tasks completed.
- ii. The participant with the higher score ranks higher. In case of a tie, the participant with the shorter completion time ranks higher.
- iii. If both the score and completion time are identical, the ranking will be considered a tie.

C. Disqualification:

- i. Participants who are more than 10 minutes late.
- ii. Participants who intentionally damage the competition field.
- iii. Participants who do not follow the instructions of the judges.
- iv. Participants with a zero score.
- v. Participants who are found guilty of valid complaints.
- vi. Participants competing in multiple categories.
- vii. The robot does not meet the size requirements.

9. Relevant Explanation

These rules serve as the basis for the implementation of judging work. During the competition, judges have the final decision-making authority. Any matters not specified in the rules shall be determined by the judging panel.

IYRC · Volleyball

1. Scope of Participation

a. **Competition Categories:**

- i. Elementary school grade (7 to 12 years old)
- ii. Middle and high school (13 to 18 years old)

b. **Number of Participants** : 2 person in a group

c. **Competition Type** : Team Match

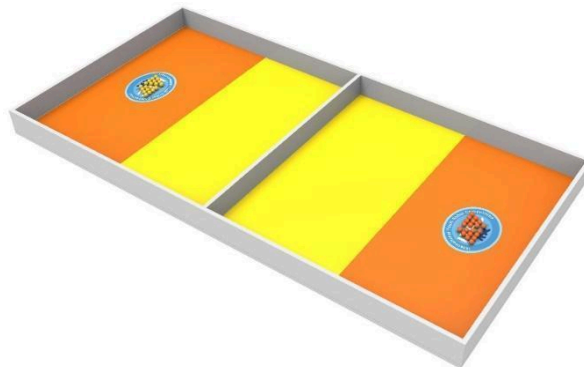
The group classification is determined based on the educational level of the participants as recognized by the local educational administrative departments (such as the Education Committee, Education Department, or Education Bureau).

2. Competition Process

- a. **Competition Registration:** Participants should register for the competition following the guidelines and schedule provided by the organizing committee. Successfully registered participants will be granted the qualification to participate in the competition.

3. Competition Environment

- a. Participants must bring their own pre-assembled volleyball robots to the competition and ensure they are fully charged. Spare batteries are allowed.
- b. Forbidden devices: USB flash drives, mobile phones, tablets, walkie-talkies, etc.
- c. The participating robots must not pose any danger to the field or the surrounding environment.
- d. Competition game field:





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- i. Game field size : 244cm (L) X 122cm (W) X, 20cm (H)
- ii. Middle baffle : 8cm height, thickness 1.5cm.

4. Robot Requirements

- a. Each participant is allowed one volleyball robot.
- b. **Mainboard:** Only 1 mainboard is allowed. The robot must use a series of control boards that can complete the competition.
- c. **Motors:** The robot is allowed to use a maximum of 4 DC motors and 2 servo motors.
- d. **Dimensions:** The maximum size of the robot must not exceed 27cm x 27cm x 27cm (including the expanded state).
- e. **Remote control:** The robot must be controlled only using a Bluetooth remote controller or RF controller. Participants may use their own remote control or the one provided by the organizer.
- f. **Power Supply:** The fully charged voltage of each robot's battery must not exceed 9V.

5. Competition Mode

Depending on the number of participating teams, either a round-robin format or a knockout format will be used for the competition.

6. Competition Task

A. **Competition Duration:** 3 minutes per game

B. **Starting of the robot:**

- i. The competition for volleyball robots starts with the sound of the referee's whistle.
- ii. Robots start from the bottom corners of the field and are placed by the participants.
- iii. During remote control of robots, participants must maintain a distance from the competition field and avoid touching or damaging the field.



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C. Task Overview

- i. The competition follows an elimination format, with the winning team advancing to the next round.
- ii. Each team consists of 2 students and 2 robots, with each student controlling one robot.
- iii. All robots with configurable IDs will need to set their IDs to 1 and use Bluetooth/RF remote controllers for the competition.
- iv. At the start of the match, each team's field will have 20 ping pong balls placed in the IYRC-LOGO area.
- v. Teams must control their robots to transfer ping pong balls from their own field to the opponent's field.
- vi. If a ping pong ball is knocked out of bounds, the referee will return it to its original position. (original position = the position of the ball before it is bounced out)
- vii. If a robot malfunctions during the match, teams can request the referee to assist in restarting the robot. If the robot still cannot function, teams can choose to remove it from the field or leave it in place without moving until the end of the match.
- viii. Parts that fall off during the match cannot be reassembled on the field but can be removed from the field with the referee's approval.
- ix. Touching a robot during the match results in a foul, unless the referee indicates that touching is allowed.
- x. Upon hearing the referee's whistle during the match, teams must pause operating their robots. Failure to pause results in a foul.
- xi. Accumulating two fouls results in the robot being removed from the field until the end of the match.

D. Winning and losing

- i. Within the 3-minute match duration, the team that successfully places more ping pong balls into the opponent's field wins the game and qualifies for the next round.

- ii. If a team successfully places all ping pong balls into the opponent's field within the match duration, the team is directly declared as the winner of the game.
- iii. In the event of a tie at the end of the match, a penalty shootout (PK) phase begins. Each team selects one participant to compete in a 30-second duel. If the score remains tied after the first round, new participants are chosen for a 1:1 duel lasting 30 seconds, and this process continues until a winner is determined.
- iv. Ranking is determined first by the round of the elimination stage, followed by the goal difference method during the matches to determine the ranking.

7. Evaluation criteria

These rules are the basis for the implementation of refereeing work, and referees (judges) have the final authority to make decisions during the competition. Any matters not stated in the rules shall be decided by the referee team.



IYRC · Strait Crossing Challenge (Drone Competition)

1. Scope of Participation

A. Competition Categories :

- i. Elementary school grade (7 to 12 years old)
- ii. Middle and high school (13 to 18 years old)

B. Number of Participants : Individual

C. Competition Type: Task completion

2. Competition Theme

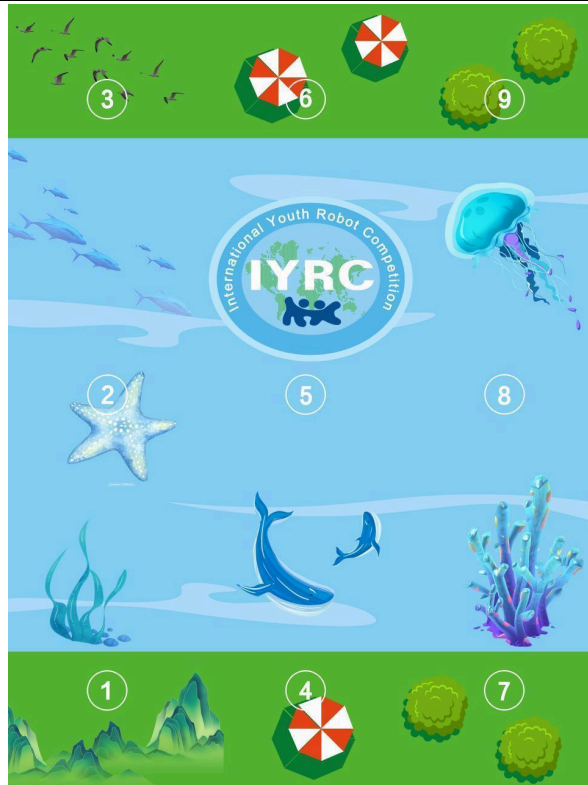
Strait Crossing

3. Competition Process

Competition Registration : Participants should register for the competition following the guidelines and schedule provided by the organizing committee. Successfully registered participants will be granted the qualification to participate in the competition.

4. Competition Environment

- a. **Control system** : Remote Control Operation
- b. **Prohibited devices** : USB Flash Drives, mobile phones, smartwatches, walkie-talkies etc.
- c. **Competition game field:**



- i. The total size of the game field is 300cm (W) x 400cm (L) ($\pm 5\%$), the positions of task points on the spot will have task props randomly placed.
- ii. In the center directly below the flying site, there is a circular area marked with an 'H' symbol, serving as both the take-off and landing point (the standing point for participants after the drone takes off).
- iii. The drone competition venue is indoors, with efforts made to maintain a wind-free and magnetically undisturbed environment.

5. Robot Requirements

- A. Each participant needs to have one remote-controlled drone.
 - i. The drone dimensions are 22cm x 22cm x 20cm. A spherical protective cover must be installed to ensure safe flight and control.
 - ii. Controller: Remote controller operating at a frequency of 2.4GHz.
 - iii. Weight: The drone's weight must not exceed 120 grams.
 - iv. Battery voltage and capacity: Less than 600mAh.

6. Competition Task

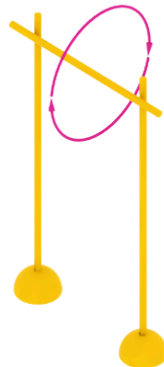
A. Task overview

- i. Elementary School : The drone starts from the take-off point, completes tasks at 5 designated points and returns to the landing point.
- ii. Middle and High School : The drone starts from the take-off point, completes tasks at 8 designated points and returns to the landing point.
All tasks **are scored only once**, multiple completions of the same task are counted as a single score.

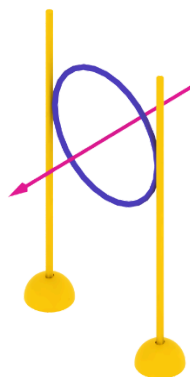
B. Task decomposition

Drone takeoff: The drone completes takeoff and vertical projection fully leaving the takeoff point is considered successful.

- i. **Task 1 Crossing mountains and ridges :** The drone completes one circle around the horizontal bar to be considered successful. A related diagram is provided below:

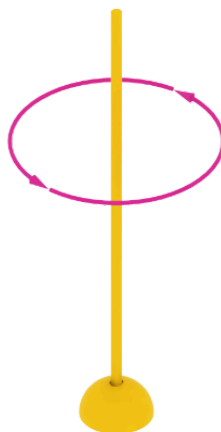


- ii. **Task 2 Crossing the strait:** The drone passing through the ring is considered successful. A related diagram is shown below:

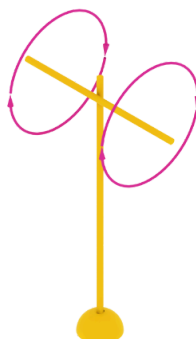


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- iii. **Task 3 Fixed-point cruising:** The drone completes one circle around the vertical pole to be considered successful (the flight altitude must not exceed the height of the vertical pole). A related diagram is shown below:



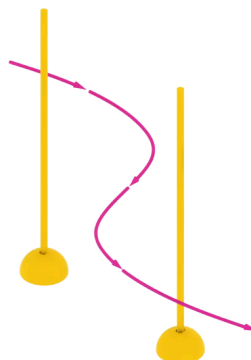
- iv. **Task 4 Dual challenge:** The drone completes one circle around each of the horizontal bars at both ends to be considered successful. A related diagram is shown below:



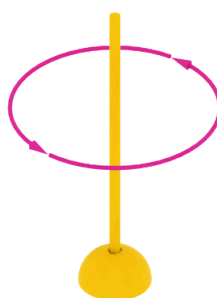
- v. **Task 5 Rapid ascent:** The drone passing through the ring from bottom to top is considered successful. A related diagram is shown below:



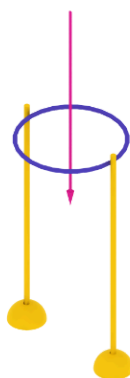
- vi. **Task 6 S-shaped maneuvering:** The drone successfully navigates around two vertical poles spaced 30 cm apart in an S-shaped pattern. A related diagram is shown below:



- vii. **Task 7 Low-altitude flight:** The drone completes one circle around the pole (the flight altitude must not exceed the height of the pole) to be considered successful. A related diagram is shown below:\

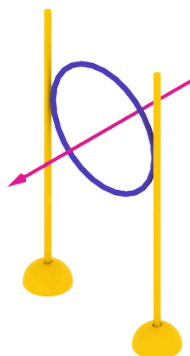


- viii. **Task 8 Rapid descent:** The drone passing through the ring from top to bottom is considered successful. A related diagram is shown below:



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- ix. **Task 9 Safe return:** The drone passing through the ring is considered successful. A related diagram is shown below:



Drone landing: The drone must come to a complete stop and its vertical projection must be entirely within the landing zone to be considered successful.

If the drone touches any competition task props while completing a task, that task will not earn any points.

C. Task Condition

- i. Task categories
- ii. Positioning, Orientation, and Height of Tasks

D. Time and Frequency

Category	On-site flight testing duration	Specified task duration	Specified task chance
Elementary School	5 Minutes	180sec/time	2 times
Middle and High School	5 Minutes	180sec/time	2 times
<ol style="list-style-type: none"> 1. On-site testing duration: During this time, all teams in each category will collectively engage in programming and testing. 2. Specified task duration: The drone must complete all tasks within the specified time. If not all tasks are completed within the allotted time, scoring will be based on the tasks successfully completed. 3. The participant will have two chances and the better score will be considered as the final result. 			



7. Robot operation and ending

A. Drone operation

- i. The drone's startup and operation method: Before takeoff from the starting point, the drone must remain stationary and its projection must not overlap or exceed the starting point's boundary. The drone should be started using remote control operation. After the drone is started, participants are not allowed to touch the drone until the end of the competition
- ii. Once the drone takes off, the participant must enter the standing point and must not leave the standing point circle for the duration of the competition.
- iii. The drone completes two consecutive competitions.
- iv. No pauses are allowed within the specified duration for task completion.
- v. Within the specified duration for task completion, if a participating drone experiences a structural detachment, the participant may request the judge's assistance in retrieving the detached part, without affecting the drone's normal flight.
- vi. During the competition, drones cannot be replaced or modified.
- vii. The judges will announce the tasks and their positions, orientations, and heights on-site.

B. Ending

- i. Complete all tasks within the specified duration.
- ii. Finishing of time allocated.
- iii. When competition is going, participants touch any part of the drone.
- iv. The drone flew away from the field for more than 5 seconds without returning.
- v. The participants completely leave the standing point circle.
- vi. The drone landed at any location.



8. Scoring

A) Scoring explanation

Evaluation Criteria	Score
Take off	10 points
Task 1 Crossing mountains and ridges	20 points
Task 2 Crossing the strait	20 points
Task 3 Fixed-point cruising	20 points
Task 4 Dual challenge	20 points
Task 5 Rapid ascent	20 points
Task 6 S-shaped maneuvering	20 points
Task 7 Low-altitude flight	20 points
Task 8 Rapid descent	20 points
Task 9 Safe return	20 points
Landing (entire drone is stopped completely within the starting area)	10 points

9. Scoring calculation

- i. Scoring is based on the designated tasks completed within the specified task duration.
- ii. The final score will take the higher score of the two competitions. Participants with higher scores rank higher and in case of ties, the participants that complete the mission using the shortest time will win the game.
- iii. If the scores and completion times are the same, it will result in a tie for the ranking.
- iv. Disqualification**
 - i. Participants late for more than 10 minutes.
 - ii. Participants deliberately damage the competition venue.
 - iii. A participant does not follow the instructions of the referee (judge).
 - iv. The participant score is zero.
 - v. Complaints were filed against participants and were established.
 - vi. The drone does not meet the size requirements.



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10. Relevant Explanation

These rules serve as the basis for referee operations. During the competition, judges have the final decision-making authority. Any matters not explicitly covered by the rules will be determined by the judging panel through discussion.



IYRC · Wandering Planet II

1. Scope of Participation

- a. **Competition Categories :**
 - i. Elementary school grade (7 to 12 years old)
 - ii. Middle School (13 to 15 years old)
 - iii. High School (16 to 18 years old)
- b. **Number of Participants :** Individual
- c. **Competition Type:** Task completion

2. Competition Theme

Wandering Planet II

3. Competition Process

Competition Registration : Participants should register for the competition following the guidelines and schedule provided by the organizing committee. Successfully registered participants will be granted the qualification to participate in the competition.

4. Competition Environment

- a. **Programming System:** Blockbased programming.
- b. Coding laptop: Participants need to bring their own laptop as well as the universal travel adapter.
- c. **Prohibited devices :** USB Flash Drives, mobile phones, smartwatches, walkie-talkies etc.
- d. **Competition game field:**



- i. Game field size: 230cm (L)×120cm (W) (±5%).
- ii. The line tracing track is black and has a width of 2.4 cm.
- iii. The prescription box for the IYRC-LOGO is a base area with dimensions of 25 cm x 25 cm.
- iv. The 11 dashed rectangles in the diagram represent the placement points for the task props.

5. Robot Requirements

- a. Each participant needs to have one programmable robot.
- b. At starting, the robot's dimensions must not exceed 25cm (L) × 25 cm (W) × 25 cm (H). The robot is allowed to expand to any size after the competition starts.
- c. **Controller:** Use a programmable mainboard capable of completing the competition tasks, supporting either a four-way or five-way integrated line-tracking board or Bluetooth remote control (for specific category only).
- d. **Line-Tracking Device:** The robot should use one four-way or five-way integrated line-tracking board or maximum 5 IR sensors. The robot's main frame should be constructed using 6 sided building blocks.
- e. **Motor:** The robot can use up to four motors (maximum)
- f. **Battery Power:** The robot's battery voltage must not exceed 9V.

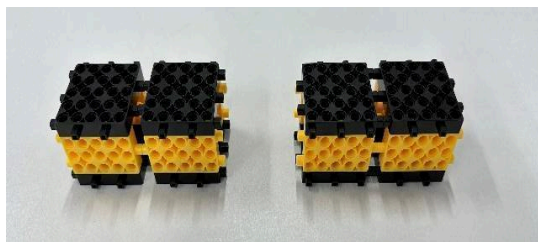
6. Competition Task

A. Task overview

- i. **Elementary School Group:** Tasks are divided into manual remote control and automatic sections (manual first, then automatic).
- ii. **Middle and High School Groups:** All tasks must be completed automatically.
- iii. **Task Points:** There are task points numbered 1 to 7, with corresponding task props labeled ① to ⑦.
- iv. **Elementary School Group:**
 - a. **Manual Part:** Participants use the remote control to move the robot from the base to transport 4 energy blocks from either 2 of the task points: 8, 9, 10, and 11 (will be announced on the spot) to task points 6 and 7 (energy blocks must touch the black line in their vertical projection). Each task point should have 2 energy blocks placed.
 - b. **Automatic Part:** After completing the manual tasks, the robot returns to the base and switches to automatic mode (the robot's body must be at least half within the base area). The robot must complete tasks ①, ②, ③, ④, and ⑤. Task ① has a fixed position, while tasks ② and ③, and tasks ④ and ⑤ may switch places.
- v. **Middle and High School Groups:** All tasks must be completed automatically. The referee will announce the placement positions for tasks ①, ②, ③, ④, and ⑤ before the competition. Tasks ⑥ and ⑦ may switch places.

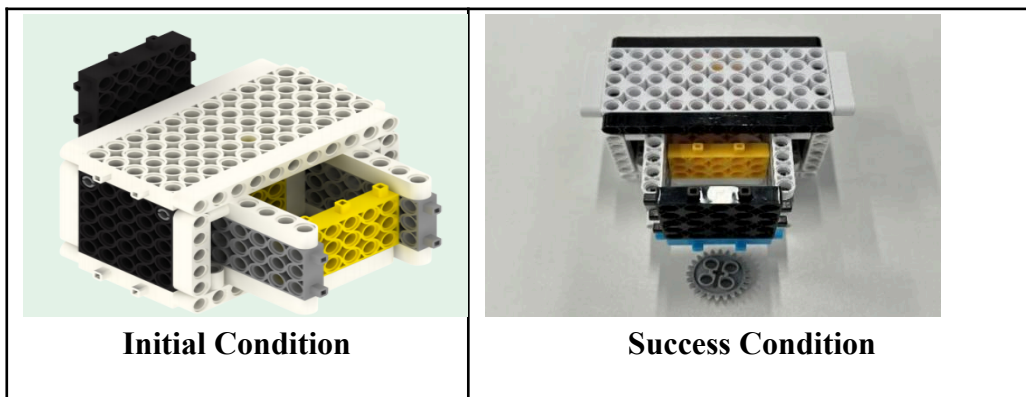
B. Task decomposition

- i. **Elementary School Group: Manual Part** (transport 4 energy blocks)

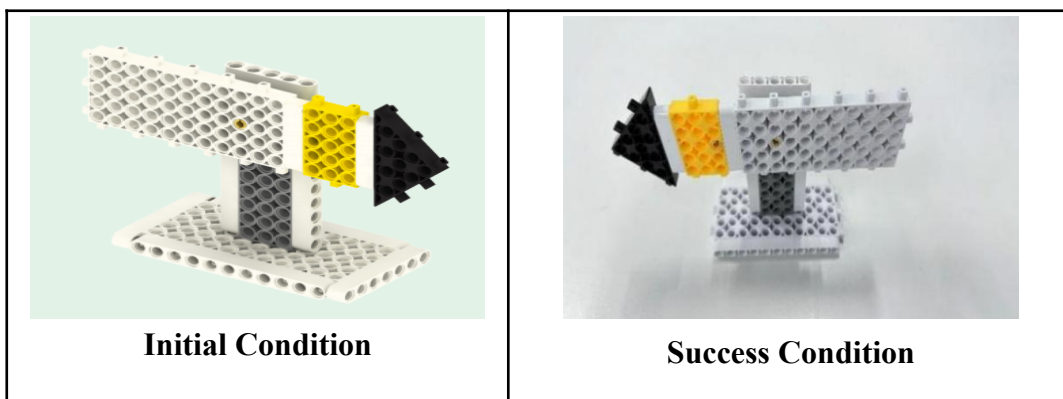


ii. **Automatic part**

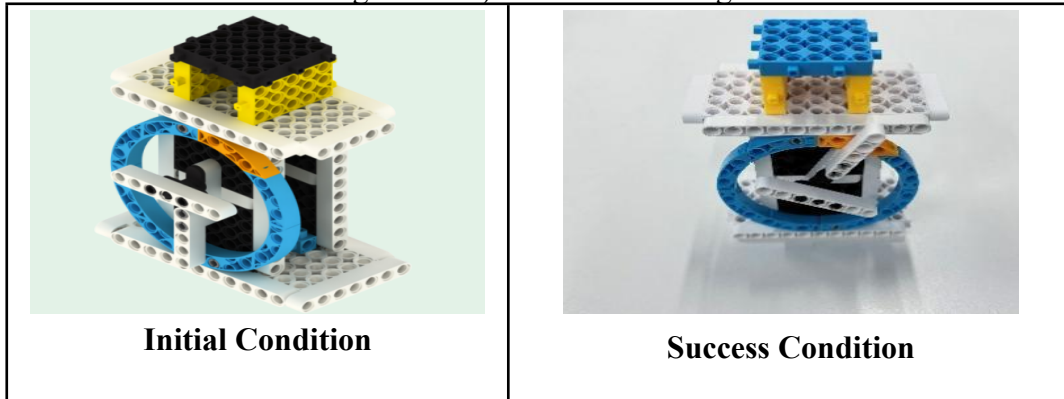
- a. **Start:** After the robot is activated, it must automatically exit the starting area (the robot must completely move out of the starting area based on its vertical projection).
- b. **Task ① Energy Extraction:** The robot must successfully remove the task module placed in the middle of the slide rail by pulling the slide rail away from the model's base (the task module must not be in contact with the base). The relevant diagram is as follows:



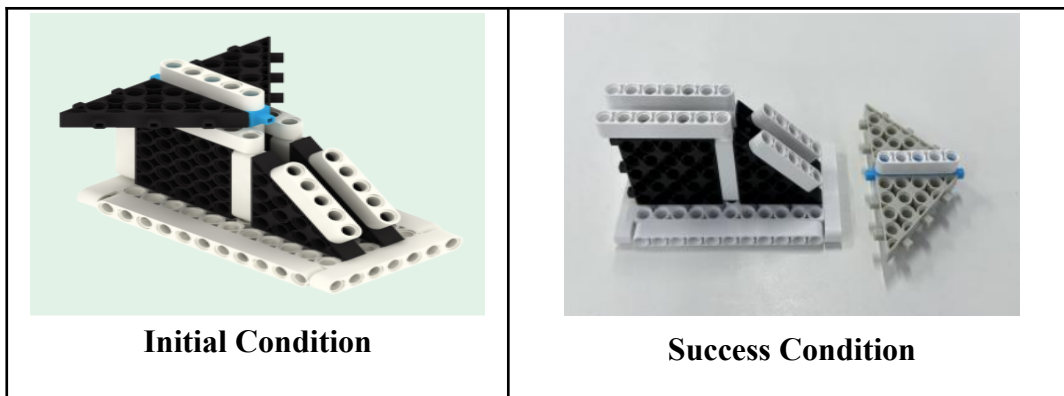
- c. **Task ② Coordinate Guidance:** The robot must rotate the horizontal rod so that the black arrow on the rod moves from facing the right to facing the left. Success is achieved when the black arrow completely crosses over the vertical rod. The relevant diagram is as follows:



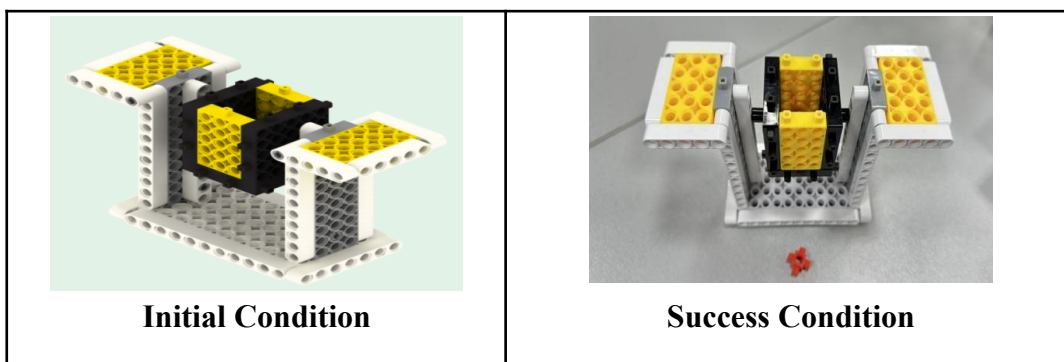
- d. **Task ③ Energy Detection:** The robot must rotate the handle to turn the white pointer on the model. Success is achieved when the white pointer stops in the orange section of the circle (the final state should have the white pointer in contact with the orange section). The relevant diagram is as follows:



- e. **Task ④ Launch the Spaceship:** The robot must maneuver to detach the airplane model from the slide rail platform. Success is achieved when the entire projection of the model is completely off the slide rail. The relevant diagram is as follows:

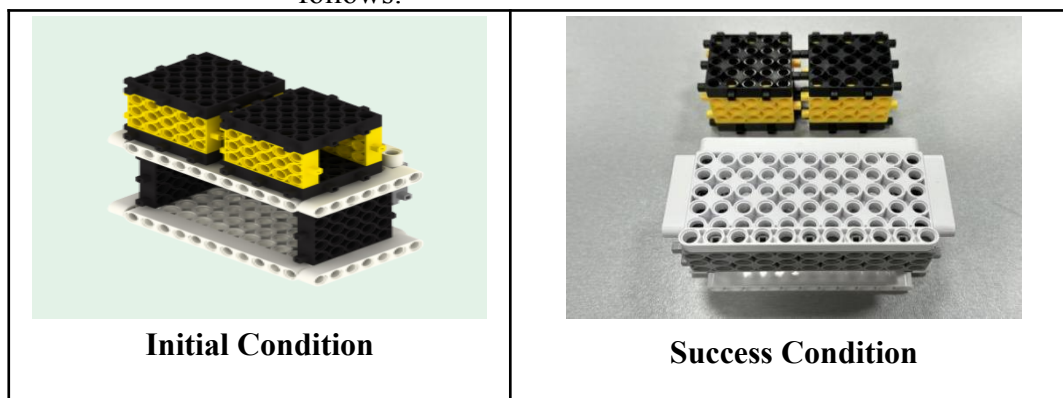


- f. **Task ⑤ Ore Screening:** The robot must manipulate the model to rotate the gravity chamber in the center, causing the ore inside the chamber to fall out. Success is achieved when the ore is completely removed from the gravity chamber. The relevant diagram is as follows:

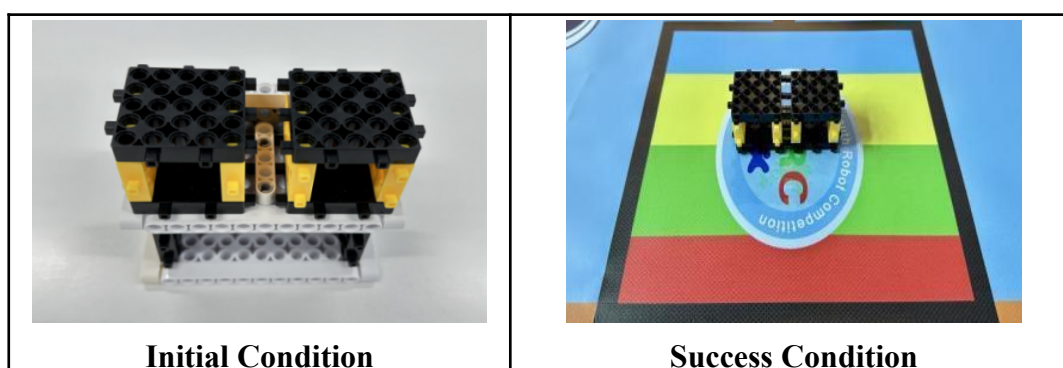


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- g. **Task ⑥ Energy Collection:** The robot must push or maneuver to make the two touching energy blocks fall off the platform. Success is achieved when the energy blocks are no longer in contact with the platform surface. The relevant diagram is as follows:



- h. **Task ⑦ Energy Transport:** The robot must transport two energy blocks, which are spaced one hole apart on the platform, back to the base. Success is achieved when the vertical projection of the energy blocks is completely within the base area. The relevant diagram is as follows:



- i. **Return to Base:** The robot must autonomously return to the base and be in a state where no further tasks are required. Success is achieved when at least half of the robot's body is in contact with the base area.

C. Task Announcement

- i. **Elementary School Group Manual Remote Control Part:** The placement positions of task props will be announced by the referee on-site.
- ii. **Elementary School Group Automatic Part:** Some task props may switch places, and the updated positions will be announced on-site.
- iii. **Middle and High School Groups Automatic Part:** The placement positions of task props will be announced by the referee on-site.



D. Duration

Group	On-site programming duration	Specified task duration	Specified task chance
Elementary School Group	60 min	120s /time	2
Middle School Group	60 min	120s /time	2
High School Group	60 min	120s /time	2
<ol style="list-style-type: none"> On-Site Programming and Debugging Duration: During this time, all teams in each group will perform programming and debugging simultaneously. Task Duration: The robot must complete all tasks within the specified time. If not all tasks are completed within the time limit, scores will be based on the completed tasks. Competition Runs: Each robot will compete in two consecutive runs. The better score of the two will be considered the final result. 			

7. Robot operation and ending

A. Robot operation

- i. Robot Start and Operation: Before the robot is started, it must remain stationary and its overall projection must not exceed the base's boundary box.
- ii. For the manual part, the robot started using a remote control.
- iii. For the automatic part, the robot can be started by pressing a button or sending a signal to the sensor.
- iv. Once started, the robot must operate autonomously, and participants must not touch the robot from start to finish (except for the elementary school group when switching from remote to automatic mode at the base).
- v. The robot will complete two consecutive runs.
- vi. No pauses are allowed during the specified task time.
- vii. If any part of the robot falls off during the specified task time and does not affect its normal operation, participants may request the referee's assistance to retrieve the fallen part.
- viii. The robot cannot be replaced during the competition.
- ix. The referee will determine the placement of task props on-site.



B. Ending

1. Complete all tasks within the specified time.
2. Time allocated is over.
3. The robot overturns or flips during movement.
4. Participants touch any part of the robot during the competition.
5. The robot's vertical projection completely moves away from the black line.

8. Scoring

A. Scoring explanation

Evaluation Criteria	Score
Starting	10 points
Energy Extraction	20 points
Coordinate Guidance	20 points
Energy Detection	20 points
Launch the Spaceship	20 points
Ore Screening	30 points
Elementary School Group Task: Energy Transport (4 items)	10 points / per item
Middle and High School Groups Task: Energy Collection (2 items)	10 points / per item
Elementary School Group Task: Energy Transport (2 items)	20 points/ per item
Return to Base	20 points

B. Scoring calculation

- i. If only part of the tasks are completed within the specified time, scores will be based on the completed tasks.
- ii. The higher score from the two competition runs will be considered the final result. Higher scores rank higher; if scores are the same, the shorter time ranks higher. If scores and times are still the same, the total score from both rounds will determine the ranking.
- iii. Each score = Points for completed tasks by the robot.
- iv. If both the score and completion time are the same, the result will be considered a tie.



C. Disqualify

1. Participants who are more than 10 minutes late.
2. Participants who intentionally damage the competition area.
3. Participants who do not follow the instructions of the referee (or judges).
4. Participants who score zero in the competition.
5. Participants who are subject to valid complaints.
6. Participants competing in multiple events.
7. Using a remote control to operate the robot during the automatic section.
8. Robots that do not meet the size requirements.

9. Relevant Explanation

These rules serve as the basis for referee operations. During the competition, judges have the final decision-making authority. Any matters not explicitly covered by the rules will be determined by the judging panel through discussion.

IYRC · Creative Design

1. Scope of participation

- a. **Competition Categories :**
 - i. Kinder (4 to 6 years old)
 - ii. Elementary school grade (7 to 12 years old)
 - iii. Middle and high school (13 to 18 years old)
- b. **Number of Participants :** 3 person maximum in 1 group
- c. **Competition Type :** Creative design work display and explanation

2. Competition Process

Competition Registration : Participants should register for the competition following the guidelines and schedule provided by the organizing committee. Successfully registered participants will be granted the qualification to participate in the competition.

3. Competition Theme

Technology + Culture

4. Competition Environment

There are no restrictions on building blocks or programming languages. You can also use materials such as paper, rubber bands, paper cups, 3D printing materials etc. to complete your work.

5. Competition Rules

- a. The entries should be created with the theme 'Unconstrained and Imaginative,' showcasing creative and imaginative ideas. The submissions should highlight innovation, keep pace with the times, and appropriately integrate creative design.
- b. The design direction can include areas such as technological innovation, industrial heavy machinery, cultural architecture, historical heritage, rare artifacts, smart transportation, future cities, and more.
- c. Entries must be relevant to the chosen theme.

- d. Presentation of the physical form of the work and text introduction (cardboard will be provided on site).
- e. The maximum size of the work cannot exceed 80cm(W) x 80cm(L) x 80cm(H).
- f. The works are presented in physical form and displayed on site in a dynamic form.

6. Scoring

The evaluation is divided into three groups: Kinder (4 to 6 years old), Elementary school grade (7 to 12 years old) and Middle and high school (13 to 18 years old) and rankings are made according to the results of the evaluation.

a. Innovation and Creation (20 points):

The theme of the work is clear, the creativity is unique, and the form of expression is novel. participants need to explain the source of innovation, the innovation process and the means of realization.

b. Design (20 points):

The design of the work should showcase highlights such as 'dynamic' and 'innovative', adhering to principles of aesthetic form. Each element in the design should have appropriate proportions, a layout is reasonable, and the materials used have practical significance and fully express the theme.

c. Rationally of the proposal (20 points):

The proposals presented in the work are rational, with clear logical relationships, correct arguments and evidence, feasibility, and suitable application scenarios.

d. Work expression (20 points):

The explanation (defense) of the work should be clear, articulate, fluent, coherent, concise, focused, and organized.

e. Procedural technology(20 points):

Reasonable and correct use of hardware, software, experimental techniques, stable and smooth operation. The work should demonstrate the use of natural science knowledge, presenting effects involving sound, light, electricity, etc.



7. Evaluation Criteria

The design of work must adhere to accurate scientific principles, be innovative in creativity, feature unique structures, maintain wholesome content, and must not contain any content that conflicts with national laws.

8. Showcase protocol

- a. Team self-introduction (including names, school and category/group).
- b. Description of the production process and highlights of the project, including each team member's role in the project.
- c. Presentation of the demonstration effect of the project.

9. Relevant Explanation

These rules serve as the basis for the implementation of judging work. During the competition, judges have the final decision-making authority. Any matters not specified in the rules shall be determined by the judging panel.



IYRC · Space Explorer (OpenHarmony Humanoid Challenge)

1. Scope of participation

- a. **Competition Categories :**
 - i. Elementary school grade (7 to 12 years old)
 - ii. Middle and high school (13 to 18 years old)
- b. **Number of Participants :** Individual
- c. **Competition Type :** Task completion

2. Competition Process

Competition Registration : Participants should register for the competition following the guidelines and schedule provided by the organizing committee. Successfully registered participants will be granted the qualification to participate in the competition.

3. Competition Environment

A. Robot

- 1. Robots must use the LINE CORE M humanoid robot kit.
- 2. Participating robots must not intentionally damage the competition area.
- 3. Robots are not allowed to change electronic components.
- 4. Participating robots must not intentionally damage the competition area or obstacles.
- 5. Participating robots must not pose any danger to the competition area or the surrounding environment.
- 6. Participating robots must protect their sensors from any external interference.
- 7. The remote control receiver of participating robots must be protected from any external interference.



4. Competition Rules

A. Duration:

- i. On-Site Programming, Debugging and Testing Time: 60 minutes.
- ii. Match Duration: 5 minutes per round.

B. Robot building

- i. Pre-build and programming are allowed.
- ii. The battery specifications, arm length, and leg length of the robot must strictly adhere to the specifications outlined in the manual (Line Core M).
- iii. The appearance of the participating robot can change in color or accessory parts.
- iv. The actions of the participating robot can be freely programmed.
- v. Participants must use their own robots and cannot use robots belonging to others to complete the competition.
- vi. Participants must prepare their own control devices (Android phones/tablets), and the devices must be in flight mode during the competition.

C. Robot Operation

1. The competition officially begins when the referee's whistle blows.
2. The robot's starting point is at the START mark on the field.
3. Please keep a distance from the competition field while operating the robot, and avoid touching or damaging the field.

5. Competition Task

A. Task overview

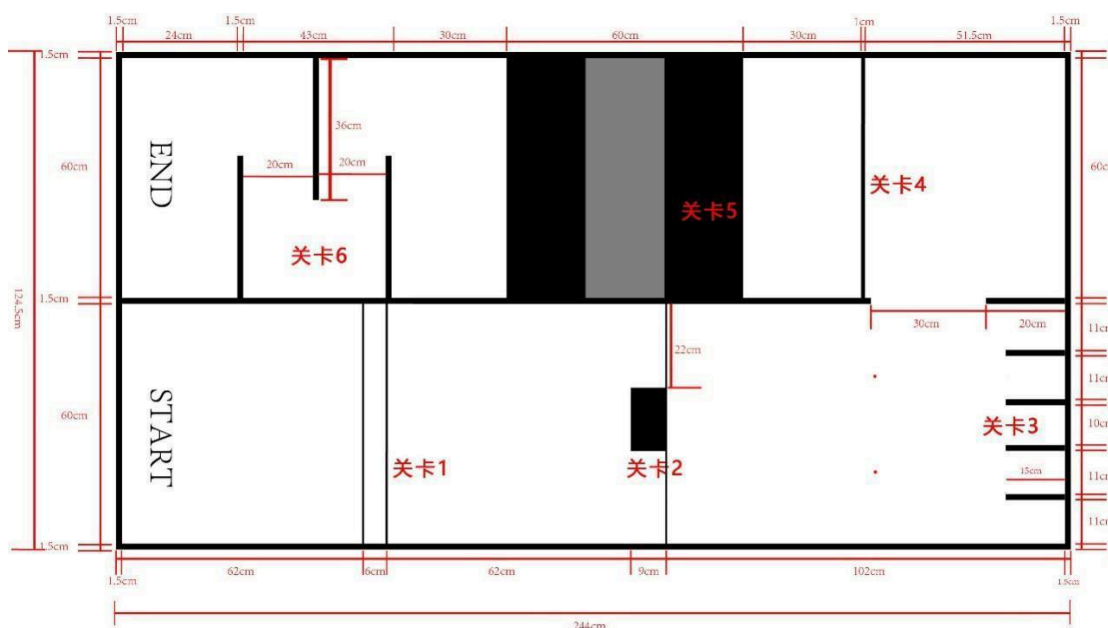
- i. At the start of the match, the participating robot must complete the tasks along the designated route.
- ii. After completing the competition tasks, the robot must stop at the finish line.
- iii. Robots may begin from the starting point only after the whistle blows.
- iv. Before the match starts, all robots will be collected and placed in the preparation area by the referee. Participants are not allowed to use the

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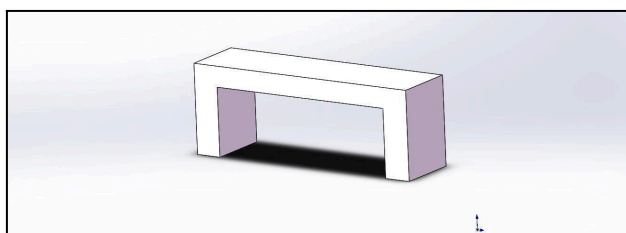
same robot as other competitors.

- v. If a robot is damaged or loses parts during the match, reassembly is not permitted.
- vi. The timing ends when the robot stops at the finish line.
- vii. If a robot experiences a malfunction, such as running out of power, that causes an interruption during the match, a rematch is not allowed.

B. Game Field

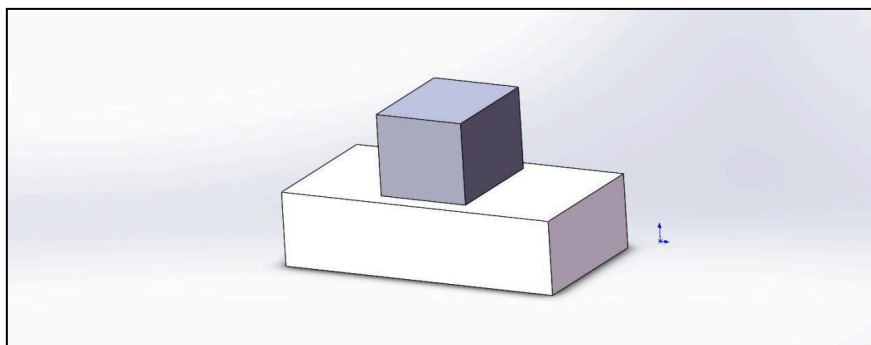


- i. The total dimensions of the arena are 122 cm x 244 cm ($\pm 10\%$).
- ii. The obstacles in the arena include:
 - a. Crawling
 - b. Moving obstructing stones
 - c. Precision shooting
 - d. Crossing barriers
 - e. Climbing up and down
 - f. Navigating curves
- iii. **Level 1: Crawling:** Use a prone position to pass through the checkpoint (20 points).

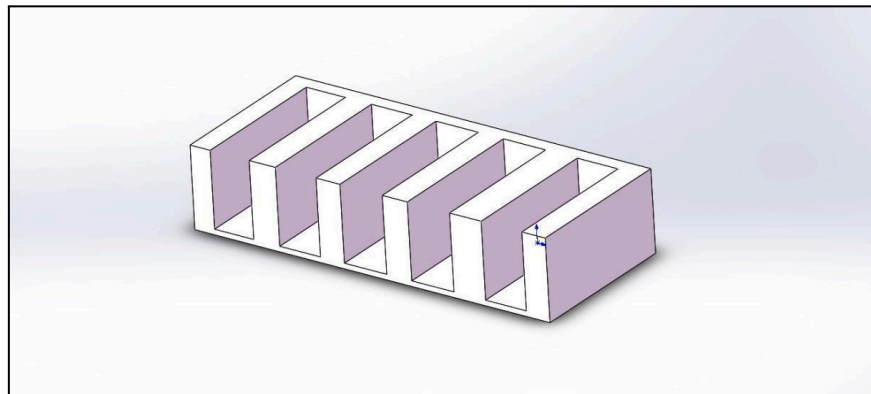


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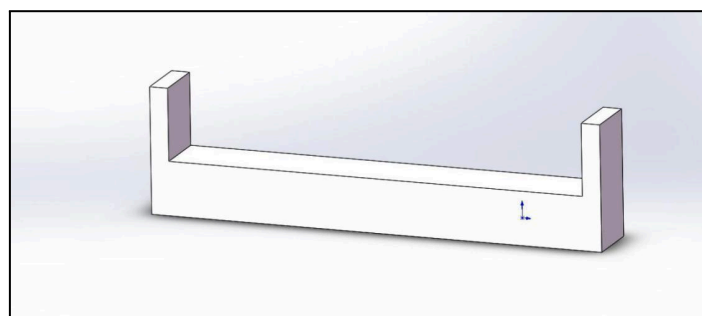
- iv. **Level 2: Transport:** The robot must transport objects from above a high platform. The robot's base must completely cross the black line beneath the platform, and the object must be placed such that it crosses the line without touching or resting on it (20 points).



- v. **Level 3: Precision Shooting:** The field is equipped with two soccer balls. The robot must kick one of the balls into a target frame marked with scores of 16, 18, 20, 18, and 16 points. The score from the first ball that successfully enters the frame will be recorded. If the robot manages to kick both balls into the frame, only the higher score will be counted.

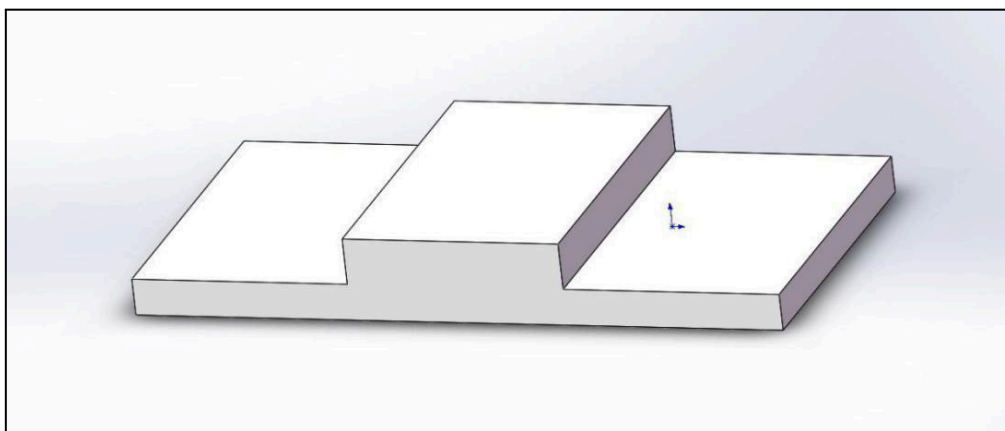


- vi. **Level 4: Overcoming Obstacles:** The robot must successfully cross over the obstacle wall (20 points).

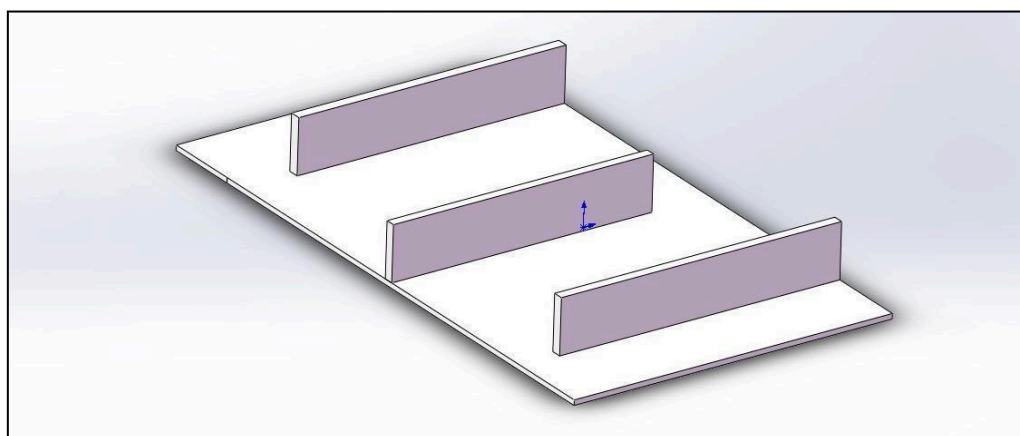


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- vii. **Level 5: Climbing:** The robot must climb the peaks. Points are awarded as follows: 5 points for each successful ascent or descent of the stairs, with a total of 20 points.



- viii. **Level 6: Navigating Curves:** The robot must navigate a challenging curved path to reach the base camp. Successful completion of this task earns 20 points.



C. Others related rules

- i. If the competing robot does not complete Level 1, Level 2, Level 4, or Level 5 during the competition, the team can request to reattempt these levels from the referee, with a maximum of 2 reattempts allowed; alternatively, the team can choose to forgo the challenge, in which case no points will be awarded for that level.
- ii. Each task is scored based on one attempt only.
- iii. The competing robot must not use rolling actions to complete the tasks; rolling over the obstacles will not earn points.



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- iv. If the robot leaves the competition area, the referee will place it back in the competition area; competitors must not touch the robot during the competition. After 2 warnings, the team will be disqualified.
- v. If the competing robot engages in any foul behavior, even if the task is completed, points will not be awarded.
- vi. Participants can choose to forgo any level challenge; no points will be awarded for that level. The decision to forgo must be requested from the referee, and the robot must not be touched or moved by the competitors.

6. Scoring

A. Scoring condition

- i. The higher the score, the better the ranking. If scores are tied, the competitor with the shorter time ranks higher.
- ii. The total score for each level is 20 points, with Levels 3 and 5 having scores based on actual performance.
- iii. The robot will earn 10 points if its overall projection leaves the START area.
- iv. The robot will earn 10 points if it reaches and makes contact with the END area.

B. Disqualify

- i. Touching the robot during the competition.
- ii. The robot violates size restrictions.

7. Relevant Explanation

These rules serve as the basis for referee operations. During the competition, judges have the final decision-making authority. Any matters not explicitly covered by the rules will be determined by the judging panel through discussion.