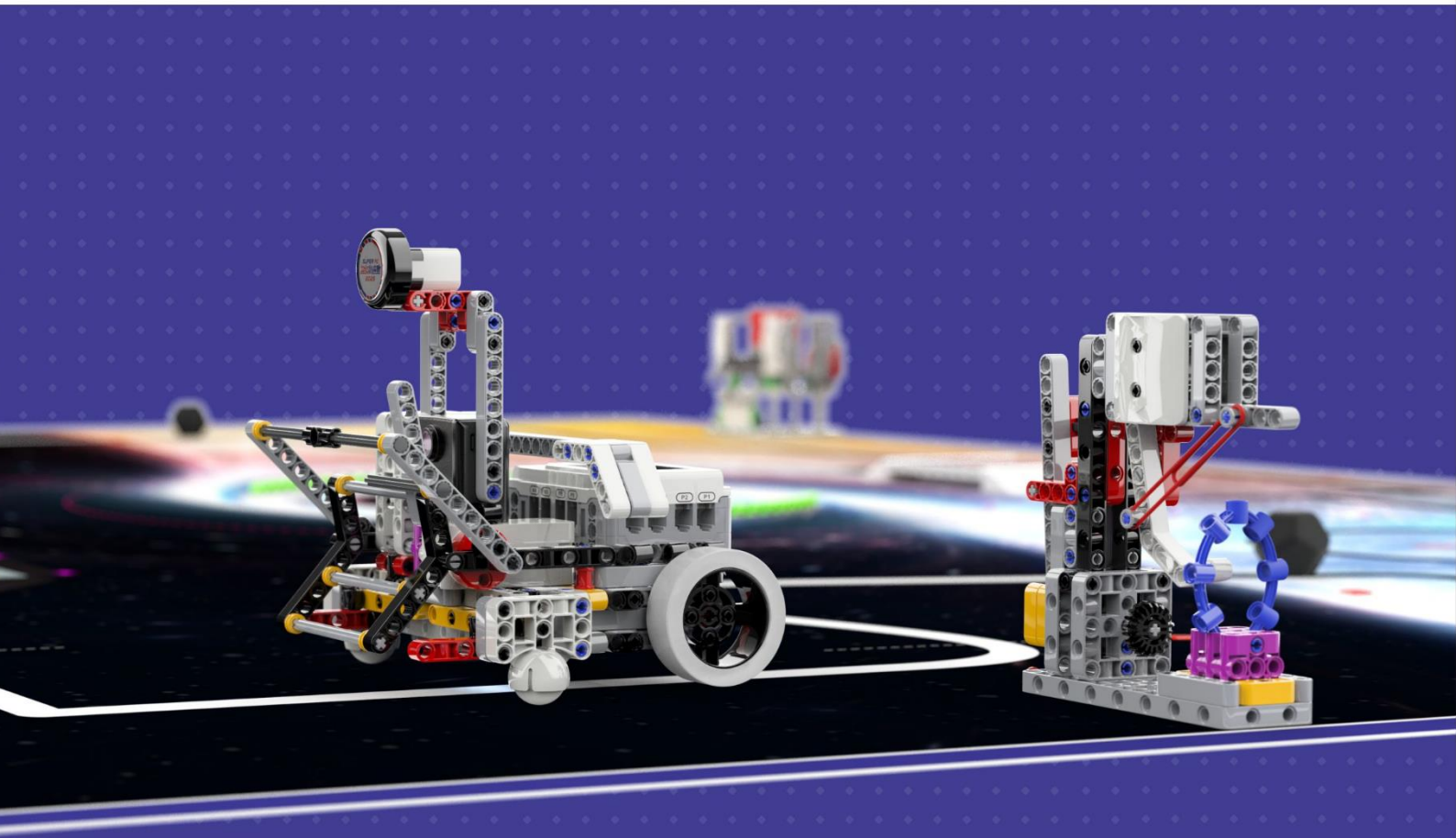
2025 SUPER AI

SuperTrack Competition

Interstellar Legend

Theme and Rules - Version 1.1



ZMROBO

ROBOT

Contents

Changelog

Version 1.1 – January 16, 2025

- **Minor Updates:** Typo and formatting fixes.
- **Statement Updates:** "Task models" or “mission model” changed to "task props." "The score for completed tasks" changed to "task completion score".
- **Section 3.2 Update:** Robot design requirements clarified some details (e.g. motor model, screen size).
- **Section 4.5, 4.6, 4.8, and Appendix Updates**: Some standards and descriptions of score sheets have been updated.
- **Sample Field Maps Update:** changed to the latest English version (see sections 5.1.1 and 6.1.1).
- **Section 5.1.2 Update:** Mission areas setting
- **Section 6.2 Update**: Additional tasks may be assigned on-site and will be announced before debugging. The previous "for Junior High and Senior High School groups" specification has been removed.

Version 1.0 – December 13, 2024

- **Initial Release**

Section 1. Game Overview

Stars twinkle in their respective constellations, while planets move through the cosmos along established orbits. As humanity embarks on interstellar travel and explores the vast universe, we will investigate the nature and laws of time and space through more precise observations and experiments. This journey will create a new legend and help us better understand the universe's evolution and development.

This competition requires young students to use their self-made robots to write and debug programs and perform competition tasks at the competition site. The theme of this competition is "Interstellar Legend." The contestants will use robots to explore the mysteries of the universe in a simulated environment, thereby popularizing scientific knowledge and training and improving the contestants' thinking, reaction, hands-on coordination, and team spirit.

Section 2. Requirements for the Team

The teams for the competition are divided into four categories:

1. Primary school (junior) group (Grade 3 and below),
2. Primary school (senior) group (Grades 4-6),
3. Junior high school group,
4. Senior high school group.

Each team consists of a contestant and a coach. Contestants must still be registered students until June 2025.

Section 3. Robot

3.1 Requirements for Building Equipment

The event requires contestants to design and build robots to complete the corresponding tasks, but there is no need to build them on-site. Only electronic parts with plastic shells and plastic building blocks can be used to build robots. 3D-printed parts cannot be used. During the competition, the robots must not damage the competition field and task props.

Except for the motor, battery box, sensor, remote controller, and camera, all parts of the equipment prepared by the contestants shall not be assembled by screws or welding, and auxiliary materials such as glue and tape are not allowed. By registering for the competition, it is deemed that the organizing committee has the final right of interpretation of these rules.

3.2 Requirements for Designing Robots

Item	**Requirements**
Quantity	1 robot per team.
Specification of the robot	In the Starship Dock[1], the robot's size must not exceed a length and a height of 25cm × 25cm, and must not exceed a width of 25cm, but can be extended after leaving this area.
Controller	Only one controller is allowed per robot. The controller's input and output ports must be connected to the cable with **RJ11 connectors** (the same applies to the motor control port). Except for the primary school (junior)

[1] The Starship Dock refers to the area where the robot starts the game and eventually returns.

	group, the controllers of other groups must have a built-in color LCD touchscreen of no less than 2.4 inches.
Sensor	The type and number of sensors allowed to be used by the robot are unlimited.
Remote controller	The primary school (junior) group can choose to use wireless remote control (2.4G or Bluetooth only) to complete the competition tasks, while the other groups must complete them through automatic program control.
Motor	The total number of motors (including servos) shall not exceed 6, and a single motor can only drive a single grounded wheel. The motors shall not be modified or over-pressurized. (For fairness, the motors used to drive the grounded wheels are limited to 3582, 3581, 3579, 3570, 9522, and 9523 models.)
Driving wheels	The diameter of the robot's wheels (including tires) used for landing shall not exceed 70mm, and the width shall not exceed 25mm.
Structure	When building a robot, you must use standard 10 mm plastic building blocks with design dimensions. You may not use 3D-printed parts or auxiliary connecting materials such as screws, bolts, rivets, glue, tape, etc.
Battery	The rated input voltage of robots in the primary school (junior) group shall not exceed 6V, and the rated input voltage of robots in the primary school (senior) group, junior high school group, and high school group shall not exceed 9V. Robots are not allowed to have boost circuits.
Roll call and check	Contestants will be allowed to bring the complete robot

	to the roll call of the first-round game. However, the robot must pass a comprehensive inspection to comply with relevant regulations. Contestants should adjust the robot's non-compliance before participating in the competition.

Section 4. Game Procedure

4.1 Entry Order

The Super AI Super Track competition is a points competition. The participating teams draw lots on the spot to determine the grouping and order of competition and take turns playing in the order determined by the draw.

The organizing committee will ensure that every team in the same group has the same chance to play, generally not less than two rounds.

When the previous team starts the game, the next team will be notified to wait and prepare. Teams that do not arrive within the stipulated time will be deemed to have given up the qualification for the competition.

4.2 Programming and Debugging

The teams will have at least 60 minutes to debug their robots before the first round. The referee team will adjust the duration of the debugging according to the actual situation and announce it to all teams before each round of debugging.

Contestants are required to program and debug in an orderly manner. Contestants who

do not comply with the order may be disqualified. Once programming and debugging are complete, all teams must place their robots in a location designated by the referee and keep them there. Contestants are not allowed to touch robots again without permission, otherwise, they will be disqualified.

After the referee signals the start of the game, the team that is still not ready will lose the opportunity to play in this round, but it will not affect the next round.

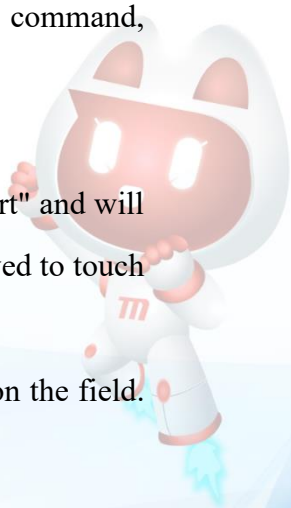
4.3 Preparations before the Game

When preparing to go on stage, the contestants take their robots and enter the competition area under the guidance of the referee or staff. Teams that fail to arrive within the specified time will be deemed to have forfeited.

When entering the field, contestants should stand near the Starship Dock and put their robots into the Starship Dock. At this time, any part of the robot and its projection on the ground cannot exceed the Starship Dock.

4.4 Start the Game

After the referee confirms that the team is ready, he will issue a countdown start command of "3, 2, 1, go". As the countdown begins, the contestants can slowly approach the robot with their hands. When the contestants hear the "start" command, they can touch a physical button on the controller to start the robot.



Starting a robot before the "Start" command will be considered a "false start" and will result in a warning or penalty. Once a robot is started, players are not allowed to touch the robot (except for reset).
After starting, the robot must not separate parts or drop mechanical parts on the field.

The referee will clear the robot parts that accidentally fall off the field at any time. Separating parts for strategic needs is a foul. If the robot completely crosses the field's boundary due to excessive speed or program error after starting, or throws the items it carries out of the field, the robot and the items shall not return to the field.

4.5 Time Score

If you complete all the basic and random tasks set by each group within the specified time and get full marks, you can get a "time score". The completion of additional tasks does not affect the "time score". After the game, the players should immediately signal the referee to stop the timing. The remaining time will be calculated according to the interval described below. (Note: The integer part of the remaining time is taken for calculation, for example, 2 seconds for 2.7 seconds, and 10 seconds for 10.3 seconds.)

(1) If the remaining time is less than 3 seconds, the time score is 0;

(2) If the remaining time is 3 seconds ≤ remaining time < 10 seconds, 5 points are added;

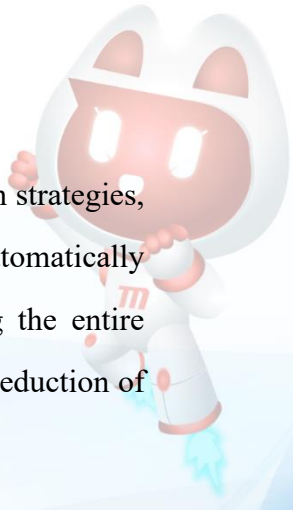
(3) If the remaining time is 10 seconds ≤ remaining time < 20 seconds, 10 points are added;

(4) If the remaining time is 20 seconds ≤ remaining time < 30 seconds, 20 points are added;

(5) If the remaining time is ≥ 30 seconds, 30 points are added.

4.6 Reset

To encourage teams to improve program stability and optimize competition strategies, a "smoothness score" is set. 50 points of "smoothness score" are automatically obtained when the competition starts. Every time a reset occurs during the entire mission, the "smoothness score" is reduced by 5 points, with a maximum reduction of



50 points.

Each time a reset occurs, the points obtained are reset to zero, the task props need to be restored to the initial state by the contestants, and the robot returns to the Starship Dock and starts again. When a reset occurs, the timing does not stop.

The robot needs to be reset to the Starship Dock in the following situations:

(1) The contestant requests a reset from the referee;

(2) The robot leaves the competition field;

(3) The contestant touches the task props or robot without permission;

(4) In an Advanced Mission[2], the robot does not move along the flight path or the robot leaves the track line.

4.7 End of Game

If the following situations occur, the competition will end upon the referee's whistle and the time will be recorded.

(1) The robot is unable to continue to perform subsequent tasks;

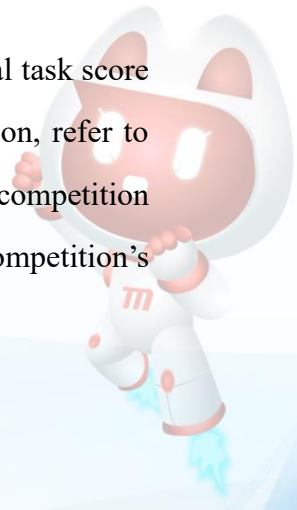
(2) The team completes the "Safe Return" task;

(3) The team actively signals the referee to end the competition;

(4) The task's time limit is reached.

4.8 Final Score

After each game, the team's single-round score will be calculated. The total task score is determined based on task completion standards. For detailed information, refer to the descriptions of Elementary Missions or Advanced Missions. Once all competition rounds are completed, the highest single-round score will serve as the competition's final score of the team.



[2] Please see section 6 for details.

The time score is the number of seconds remaining at the end of the round, refer to the requirements of "Section 4.5 Time Score".

Single-round score = task completion score + smoothness score + time score.

4.9 Ranking

After all the games in a certain group are over, all teams will be ranked according to their total score. If two teams have the same score, they will be ranked again according to the following criteria:

(1) The team with the higher total score in the two rounds will be ranked higher.

(2) The team with the shorter completed time in the two rounds will be ranked higher.

(3) The team with the fewer reset times will be ranked higher.

(4) The team with the fewer motors and sensors used by the robot will be ranked higher.

Section 5. Descriptions of Elementary Missions

The following description of Elementary Missions only applies to the Primary School (Junior) Group. Teams control the robot to complete tasks by program control or remote control. The robot can arrange the order of completing the tasks by itself. After completing the task, all robots of the teams must return to the designated area to end the game.

The competition includes an automatic period of 10 seconds and a remote-control period of 110 seconds, totaling 120 seconds. During the automatic period, the robot must complete the tasks set in the field through program control; during the remote-control period, the contestants can operate the robot through the remote controller to complete the tasks set in the field. The remote-control period can only start after the automatic period ends.

For the task props, please refer to the diagrams below the task description. Note that the actual task props in the competition may differ. For example, the beams, connector pegs, and other structures may come in different colors or vary slightly in size and height. Contestants should be capable of making adjustments based on the actual conditions.

5.1 Competition Field for the Elementary Missions

5.1.1 Competition Field

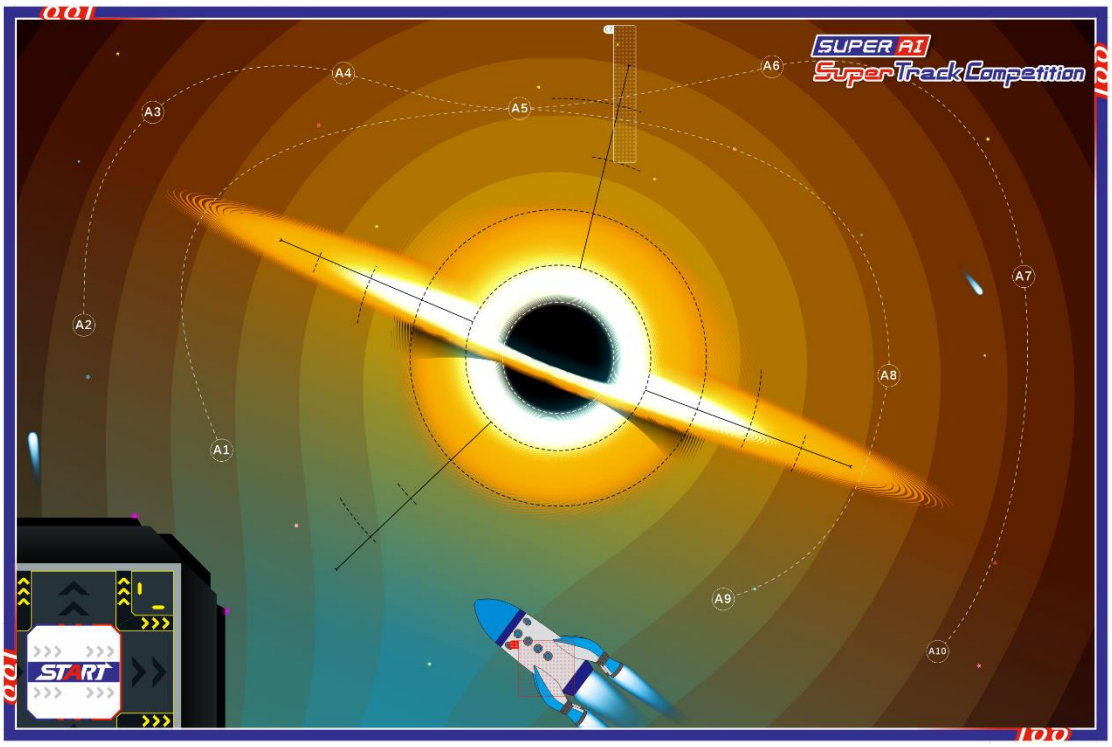


Figure: Sample Field Map of the Elementary Mission

5.1.2 Specifications of the Field

(1) The layout of the competition field for the Elementary Mission is shown in the figure above. The size of the field is 3000mm in length and 2000mm in width.

(2) There is a circular area in the center of the field that resembles a black hole. The black hole area is composed of three concentric circles with diameters of 800 mm, 500 mm, and 300 mm respectively. The areas composed of the black hole moving from the outermost to the innermost circle, are known as the apparent boundary, the event horizon, and the center of the black hole.

(3) There are multiple mission areas around the field. Mission area C1 is fixed with the **Starship Navigation task**, mission area C2 is fixed with the **Interstellar Scientific Research** task, and the remaining areas are randomly set with task props according to requirements before programming and debugging begin.

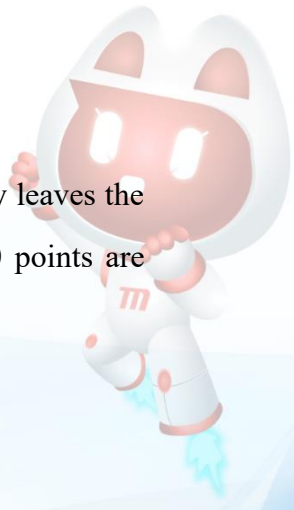
(4) At the competition field, a Starship Dock is measuring 250mm in length and 250mm in width, which is the area where the robot starts and ultimately returns. After the competition starts, the robot departs from the Starship Dock to each mission area to complete the corresponding actions and finally returns to the Starship Dock before the timer expires.

5.2 Elementary Missions

The following are the tasks that robots need to complete in the competition. Among them, **"Smooth Departure"** and **"Starship Navigation"** must be completed during the automatic period to be valid, otherwise no points will be scored.

Additional tasks may be set at the competition site and will be announced before the start of debugging. Locations of task props are set in the corresponding areas according to the requirements. If no additional tasks are set for this game, the task will not be scored.

5.2.1 Smooth Departure



(1) The robot leaves the Starship Dock.

(2) At the beginning of the game, the robot's vertical projection completely leaves the Starship Dock (each robot is only recorded once in each round), and 60 points are scored.

5.2.2 Starship Navigation

(1) The task props of Starship Navigation consist of a legendary starship, a launcher, and a control center.

(2) The legendary starship is fixed in the C1 mission area, and the launcher is set inside the starship.

(3) The robot needs to use the key to touch the activator, activating the Legendary Starship through the control center.

(4) If the operation sign of the control center lights up, 60 points will be scored.

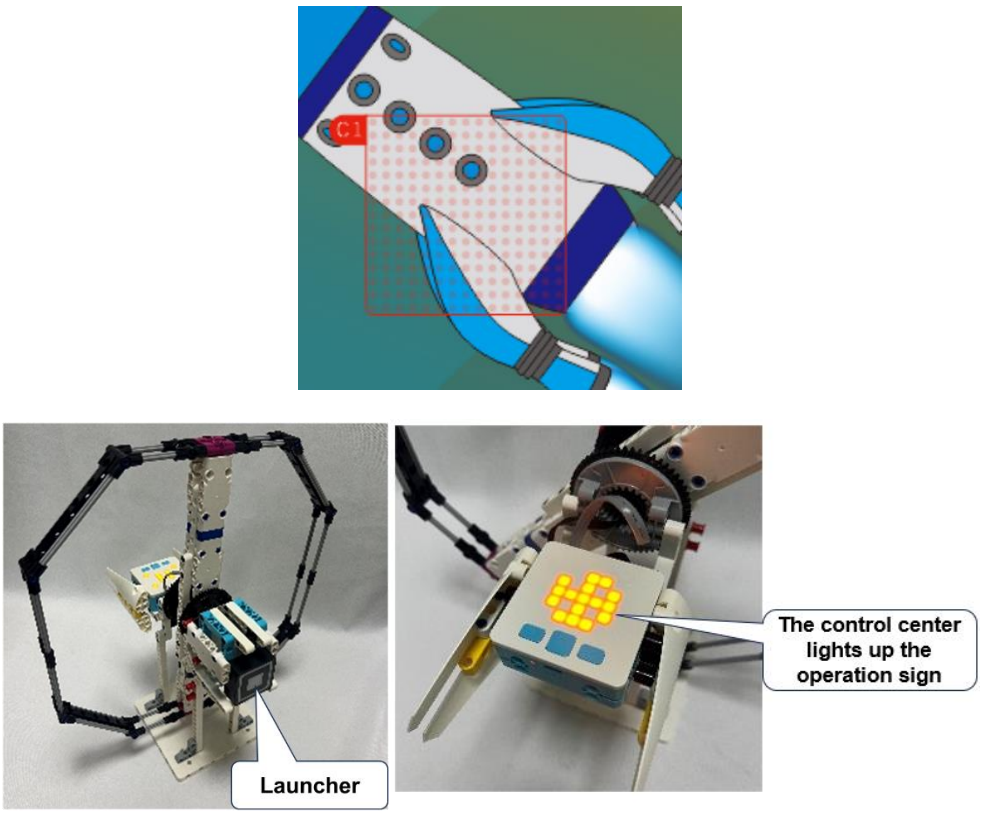


Figure: The Mission area C1, the initial and completed states of the Starship Navigation task prop

5.2.3 Space-time Distortion

(1) The task prop of Space-time Distortion is randomly set up in the field.

(2) The task prop consists of a platform and two inclined slopes. The dimensions of

the platform are 150mm in length, 150mm in width, and 20mm in height. The dimensions of the slope are 150mm in length, 50mm in width, and 20mm in height.

(3) During the entire process of the robot boarding the space-time distortion prop, at least one side of the driving wheel must remain in contact with the slope and the top surface of the platform. Completion of this task will result in 60 points.

Figure: The Space-time Distortion task prop

5.2.4 Event Horizon Exploration

(1) A detector prop is placed in each of the 10 mission areas from A1 to A10.

(2) The detector is a dodecahedron with a length, width, and height no greater than 50 mm.

(3) The robot reaches the front of the detector and delivers it to the black hole in the center of the field. When one detector leaves the initial place, the task is considered completed and 10 points will be scored for each.

(4) If the detector touches the apparent boundaries of the black hole, 10 points will be added for each. If the detector touches the event horizon of the black hole, 20 points will be added for each. If the detector touches the center of the black hole, 30 points will be added for each. If the detector touches two areas simultaneously, the area with the highest score will be counted.

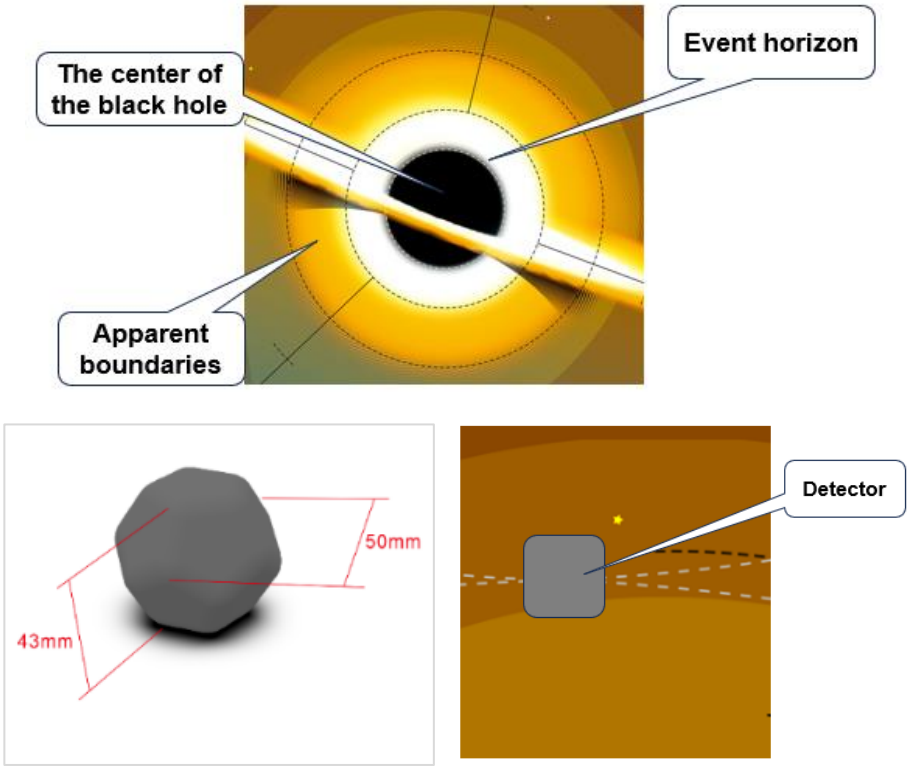


Figure: The structure of the black hole, the detector, and its placement

5.2.5 Interstellar Scientific Research (Additional Task)

(1) Before programming and debugging begin, the referee randomly draws lots to decide whether to add the Interstellar Scientific Research task to the game. If so, the Interstellar Scientific Research task prop will be covered in mission area C2. The referee will randomly adjust the prop's orientation based on the field's situation.

(2) The task prop mainly comprises a lever, a scientific research device, and four constellations. The constellations are set up on the left and right sides of the scientific research device, and patterns of the four constellations are pasted on the device's four surfaces.

(3) After the robot pushes the lever to make the scientific research device rotate more than one circle, the contestant needs to operate the robot to push down the

corresponding constellation on the left or right side according to the constellation pattern on the side of the scientific research device facing the lever, so that it changes from a vertical state to a horizontal state.

(4) If the robot causes the limiter to engage, 10 points will be scored. If the corresponding constellation on the front of the scientific research device is pushed down to a horizontal state, 50 points will be added. It can be scored if only one corresponding constellation is pushed down among the four constellations. No points will be awarded if more than one or the wrong constellation is pushed down.

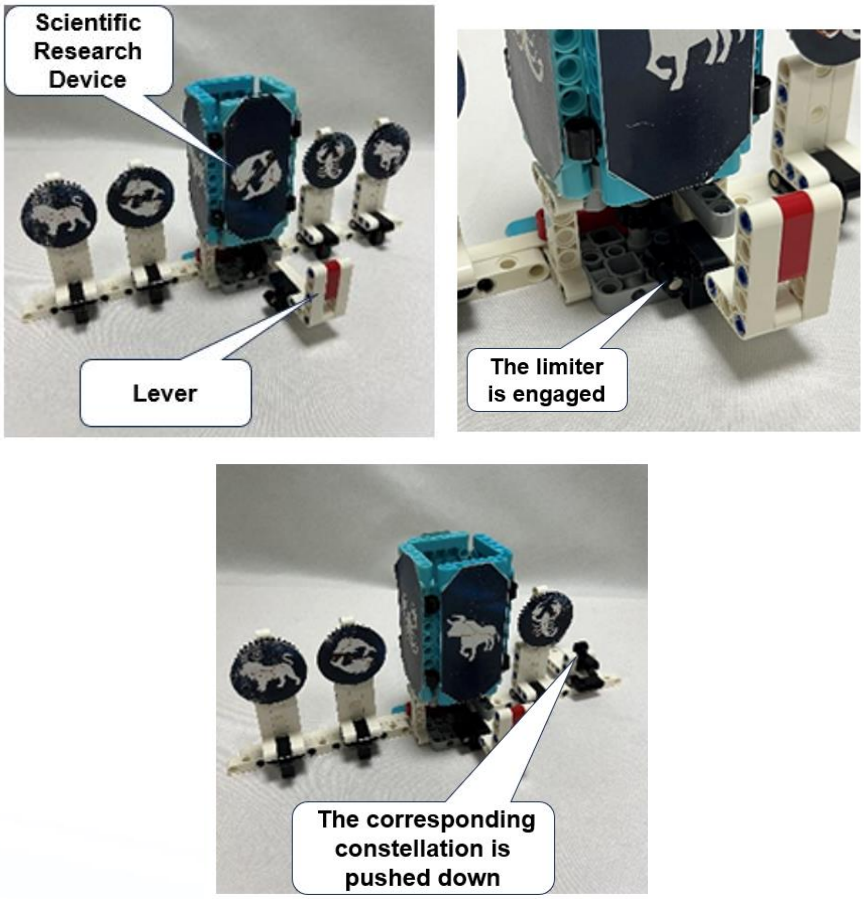


Figure: the initial, intermediate, and completed states of the Interstellar Scientific Research task props

5.2.6 Safe Return

(1) The robot must return to the Starship Dock before the timer expires.

(2) The robot's drive wheels are completely projected into the Starship Dock and the "√" sign is displayed on its screen, and 60 points are scored.

5.3 Randomness of Tasks

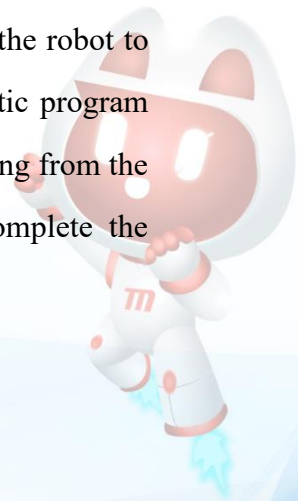
"Starship Navigation" is fixed in mission area C1, " Interstellar Scientific Research" is fixed in mission area C2, and the positions of the task props of "Space-time Distortion" and "Event Horizon Exploration" are not fixed. According to the task requirements, the referee determines the task props' position and direction by drawing lots before programming and debugging.

Once the task props' position and direction in the same team group are determined, they will remain consistent in all rounds.

Session 6. Descriptions of Advanced Missions

The following description of Advanced Missions only applies to the Primary School (Senior), Junior High School, and Senior High School groups.

There is an irregular track line distributed on the field. The task requires the robot to start from the Starship Dock in the specified direction under the automatic program control within the task limit of 180 seconds, move forward without deviating from the flight path, and go to each mission area as quickly as possible to complete the designated task and finally reach the finish area.



For the task props, please refer to the diagrams below the task description. Note that the actual task props in the competition may differ. For example, the beams, connector pegs, and other structures may come in different colors or vary slightly in size and height. Contestants should be capable of making adjustments based on the actual conditions.

6.1 Competition Field for the Advanced Missions

6.1.1 Competition Field

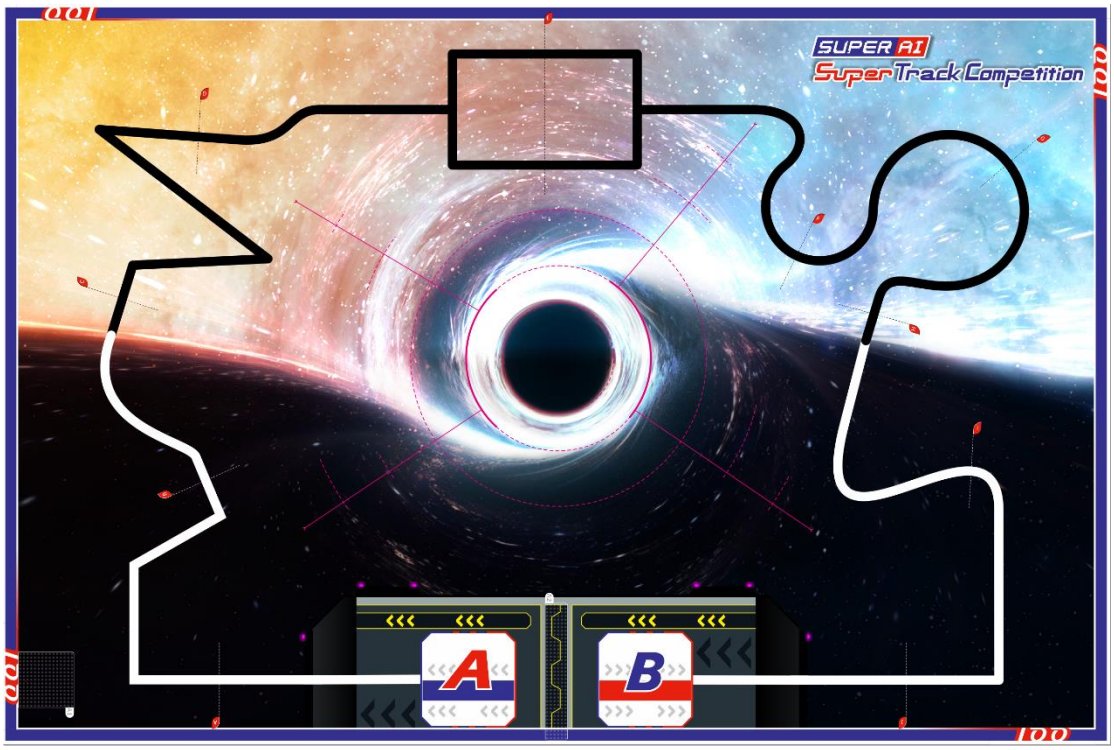


Figure: Sample Field Map of the Advanced Missions

6.1.2 Specifications of the Field

(1) The specific layout of the competition field will be subject to on-site announcement, with the maximum size of the field being 3000 mm in length and 2000 mm in width.

(2) There is an irregularly distributed flight path in the field map, which is mainly composed of a track line with a width of 25 mm (±1 mm) (the track line is white and black). The flight path is the route that guides the robot's movement direction.

(3) A black hole area is in the center of the field, composed of three concentric circles with diameters of 800 mm, 500 mm, and 300 mm respectively.

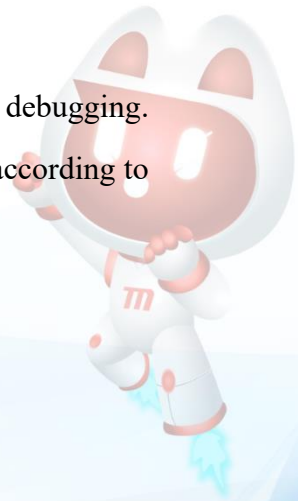
(4) There are two starship docks with a length of 250 mm and a width of 250 mm in the competition field, marked A and B respectively. They are the starting and arrival areas of the robots. After the competition begins, the robots start from Starship Dock A and travel along the flight path, eventually arriving at Starship Dock B on the other side.

6.2 Advanced Robotics Mission

Basic tasks: Smooth Departure, Flight Path, Space-time Distortion, Event Horizon Exploration, Starship Navigation, Safe Return.
Random tasks: Hatch Unfolding, Supplies Loading.
Additional tasks: Interstellar Scientific Research.

The Primary School (Senior) group does not need to do random tasks. The Junior High school group draws 1 of the above random tasks to complete, and the Senior High School group needs to complete all 2 random tasks.

Additional tasks may be assigned on-site and will be announced before debugging. The task props of the additional task will be set in the corresponding area according to the requirements.



6.2.1 Smooth Departure

(1) The robot leaves the Starship Dock.

(2) If the robot's vertical projection completely leaves the Starship Dock at the beginning (only one record per round of the competition), 60 points will be scored.

6.2.2 Flight Path

(1) On the flight path of the entire field, there are several dotted lines perpendicular to the flight path, which divide the entire flight path into multiple sections. English letters such as "A, B, C" are marked in order.

(2) The robot must move forward in the direction of the flight path throughout the whole process. If the robot needs to perform other tasks, it can briefly deviate from its current flight path or reverse. (After completing these tasks, it must return to the point of deviation and continue on its original path.) The two driving wheels of the robot must be located on both sides of the flight path or just cover the flight path's track line.

(3) If any driving wheel of the robot touches a marked line on the flight path, 6 points will be scored, with a full score of 60.

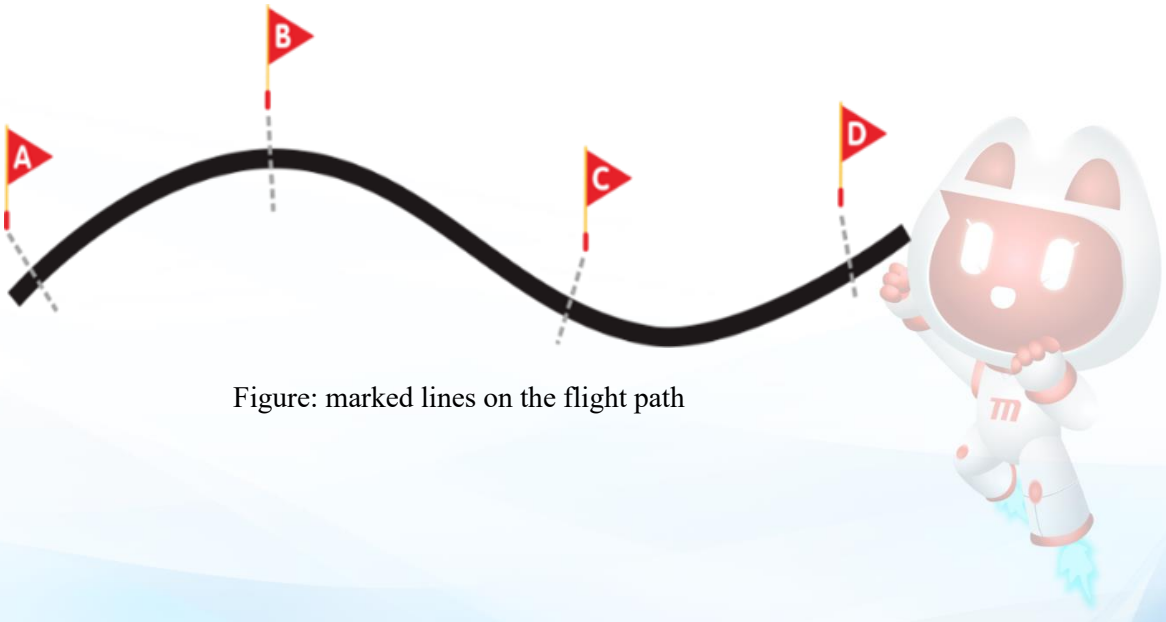


Figure: marked lines on the flight path

6.2.3 Space-time Distortion

(1) The task prop of Space-time Distortion is fixed at the marked line E and is placed as shown in the figure below.

(2) The task prop consists of a platform and two transition slopes. The platform measures 150mm in length, 150mm in width, and 20mm in height. Each transition slope is 150mm long, 50mm wide, and 20mm high.

(3) If the robot enters the Space-time Distortion area from the entrance and leaves from the exit, it completes the task and gets 10 points. If the driving wheels on either side of the robot touch the top surface of the two slopes and the platform, an additional 20 points will be awarded.

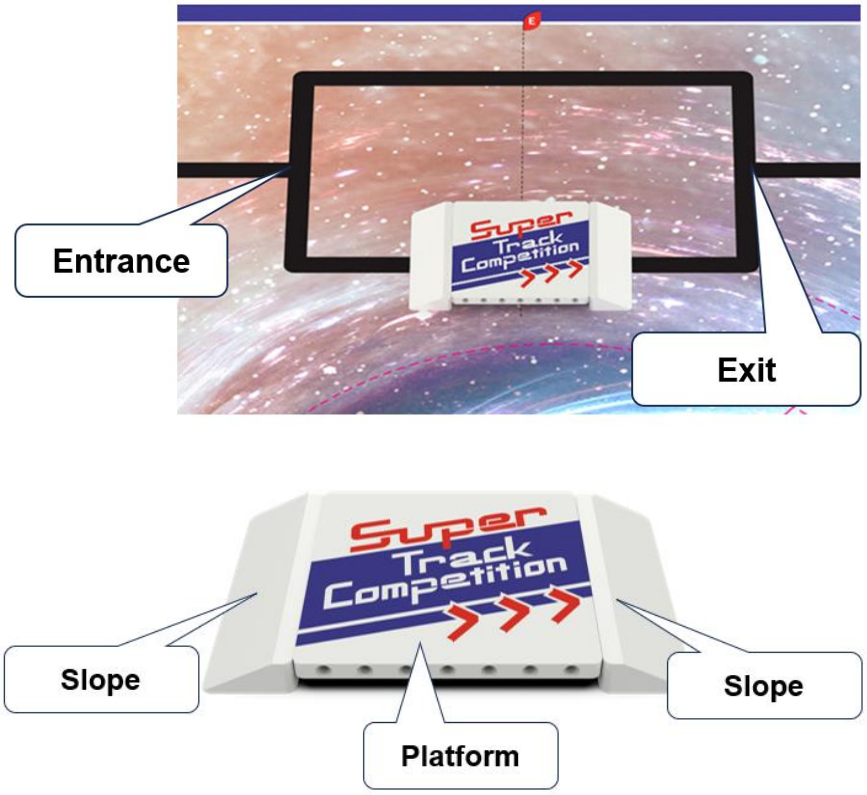


Figure: The Space-time Distortion task prop

6.2.4 Event Horizon Exploration

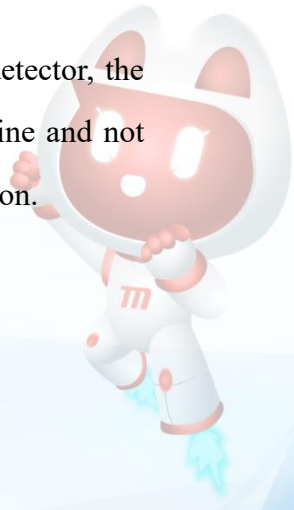
(1) Detector props are randomly set up on some parts of the flight path, with at least one for the Primary School (Senior) group and at least two for the Junior High and Senior High School groups. Two soft rubber strips with a length of 410 mm, a width of 10 mm, and a height of 10 mm are set at the dividing line between the event horizon and the apparent boundaries of the black hole.

(2) The detector prop is a dodecahedron with a length, width, and height not exceeding 50 mm. Before programming and debugging begin, the referee randomly draws a letter representing the marked line on the flight path. After confirmation, the referee will directly cover the detector model at the intersection of the corresponding marked line and the flight path.

(3) When the robot reaches the detector, it picks up the detector and delivers it to the black hole in the center of the field. When the detector leaves the initial placement point, the task is completed and 10 points are scored for each move.

(4) If the detector touches the apparent boundaries of the black hole, 10 points will be added for each; if the detector touches the black hole's event horizon, 20 points will be added for each; if the detector touches the center of the black hole, 30 points will be added for each touch. If the detector touches both areas at the same time, the highest score of the two will be used for extra points.

(5) During the entire process of the robot picking up and delivering the detector, the robot's vertical projection must always remain in contact with the track line and not touch the black hole area, otherwise it will be considered an invalid operation.



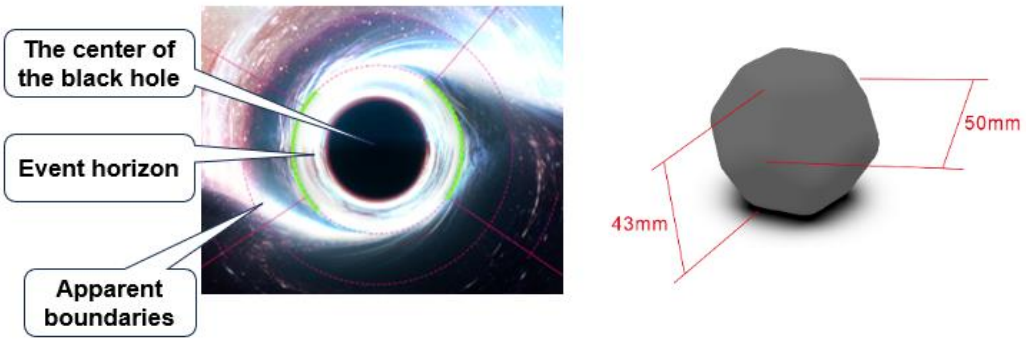


Figure: areas of the black hole, and the format of the detector

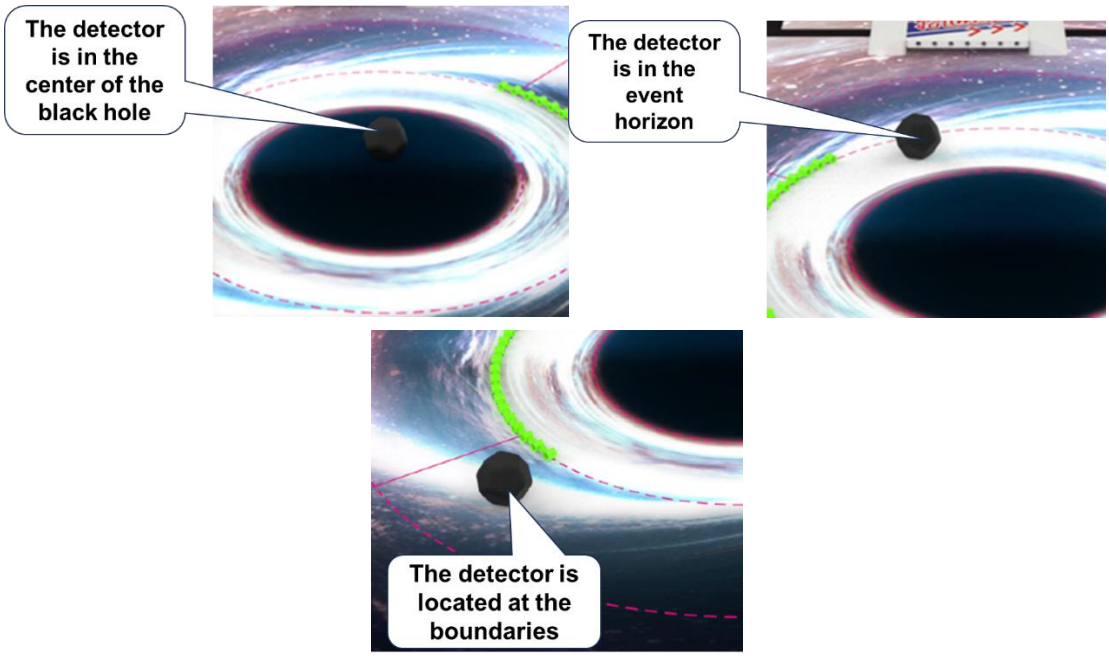


Figure: the three completed states of the Event Horizon Exploration task props

6.2.5 Hatch Unfolding

(1) The task props of Hatch Unfolding consist of hatches, an operating lever, a spaceship, and a platform, with the spaceship placed inside the hatches.

(2) The robot needs to lift the operating lever upward to open the hatches so that the spaceship on the platform rises.

(3) The top of the spaceship is higher than the hatches and always maintains contact with the top surface of the platform, and 60 points will be scored.

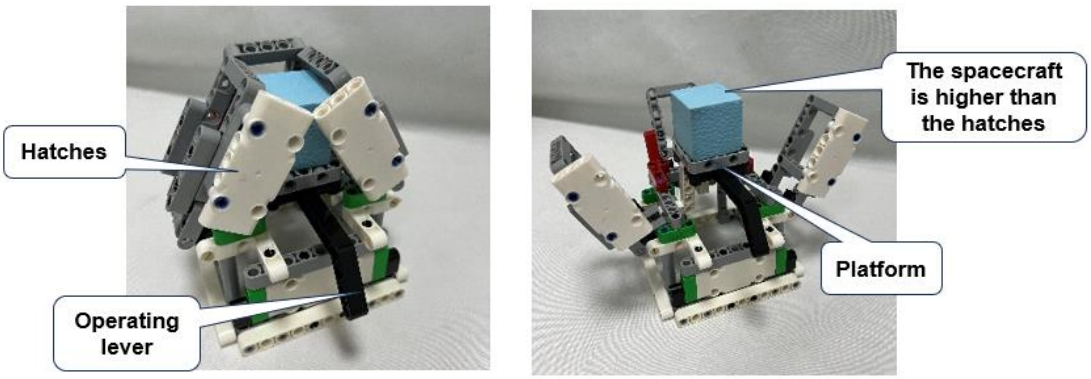


Figure: The initial and completed states of the Hatch Unfolding task props

6.2.6 Supplies Loading

(1) The task props of Supplies Loading consist of supplies (building-block combination), a hook, an operating lever, and a base plate.

(2) The robot needs to push the operating lever forward to make the hook pick up the supplies.

(3) If the supplies are in contact with the hook but not in contact with the base plate, 60 points will be scored.

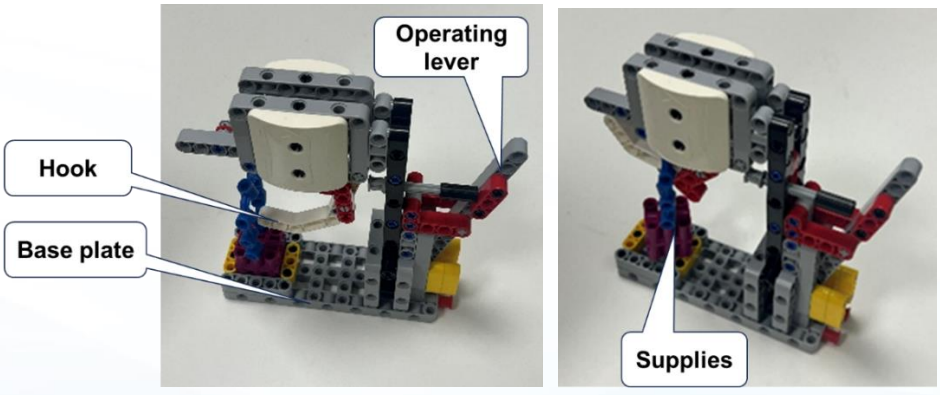


Figure: The initial and completed states of the Supplies Loading task props

6.2.7 Starship Navigation

(1) The task props of Starship Navigation consist of a legendary starship, a launcher, and a control center. The starter always faces the adjacent track line.

(2) The legendary starship is fixed in mission area A1, and the launcher is set inside the starship.

(3) The robot needs to use the key to touch the launcher so that the control center can start the legendary starship.

(4) If the control center lights up the operation sign, 60 points are scored.

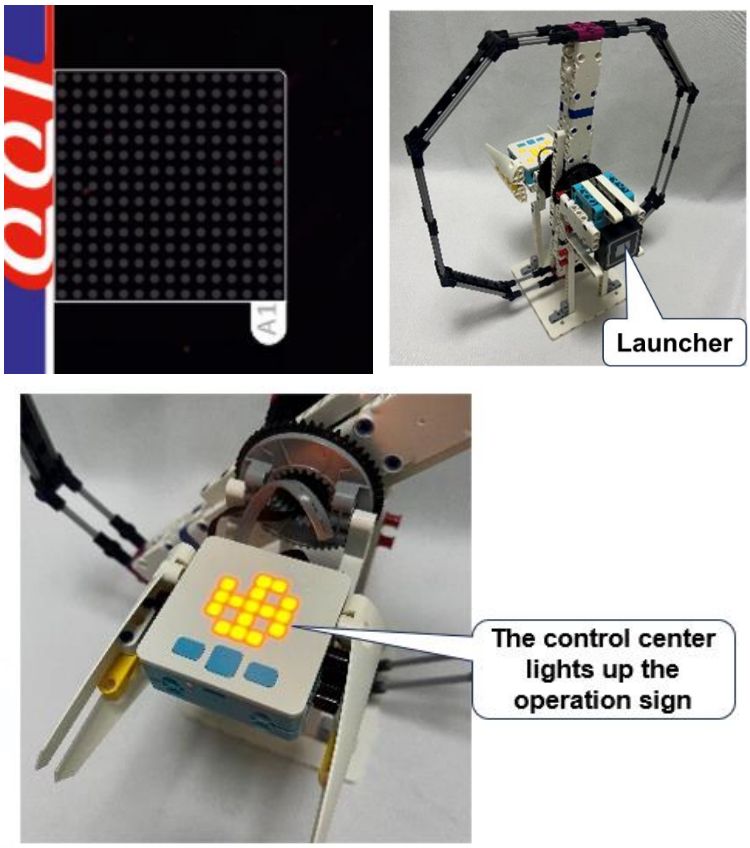


Figure: The mission area A1, the initial and completed states of the Starship Navigation task prop

6.2.8 Safe Return

(1) The robot moves forward in the order of the letters on the marking line without leaving the flight path and enters the finish area (i.e., Starship Dock B).

(2) If the vertical reflection of the robot's driving wheels is included in the finish area, 60 points will be scored.

6.2.9 Interstellar Scientific Research (Additional Task)

(1) The props of Interstellar Scientific Research are fixed in Mission Area A2 next to the finish area. The robot can only perform this task after completing the "Safe Return" task. This task will not be timed, and its completion or failure does not affect the time score.

(2) This set of props consists of an operating lever, a scientific research device, and four constellations. The four constellations are respectively set up on the left and right sides of the identifier. The four surfaces of the scientific research device are pasted with patterns of the four constellations.

(3) After the robot pushes the operating lever to rotate the scientific research device for more than one circle, it identifies the constellation pattern on the side of the scientific research device facing the robot, and pushes down a corresponding constellation on the left or right side based on the image recognition, so that the constellation will change from a vertical state to a horizontal state.

(4) If the robot causes the limiter to close, 10 points will be scored. If the corresponding constellation on the front of the scientific research device is pushed down to a horizontal state, an additional 50 points will be awarded. Among the four

constellations, only one corresponding constellation can be pushed down. No points will be awarded if more than one or the wrong constellation is pushed down.

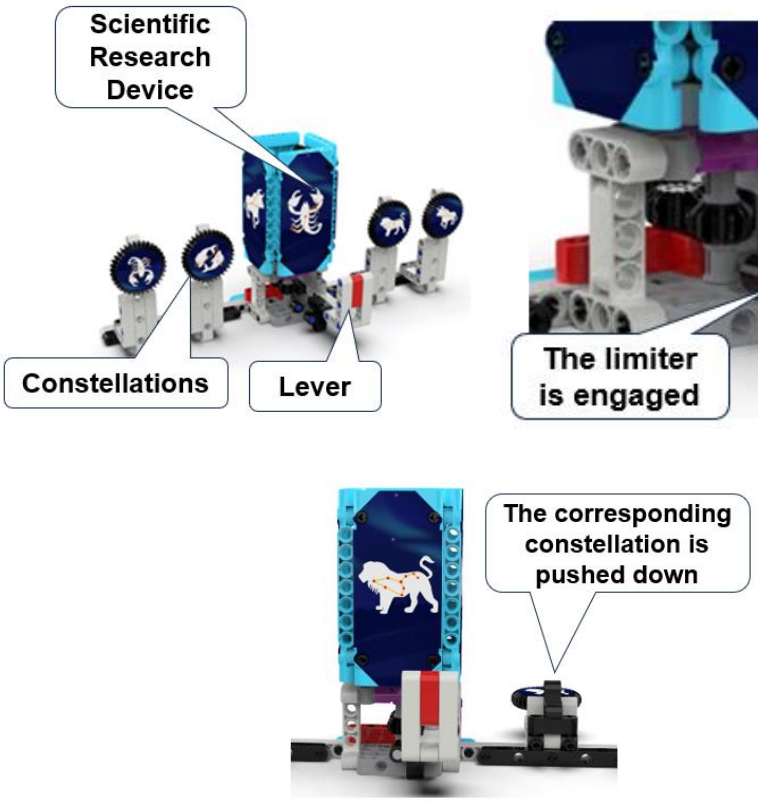


Figure: The initial, intermediate, and completed states of the Interstellar Scientific Research task props

6.3 Randomness of Tasks

Except for "Starship Navigation" which is fixed in mission area A1, the additional task "Interstellar Scientific Research" is fixed in mission area A2, "Space-Time Distortion" is fixed at marked line E, and the locations of the task props of "Event Horizon Exploration", "Hatch Unfolding" and "Supplies Loading" are not fixed. Before programming and debugging start, the referee determines the location and direction of the task props by drawing lots, according to the task requirements.

Once the task props' position and direction in the same team group are determined, they will remain consistent in all rounds.

6.4 Time Limit

The duration of a single round is 180 seconds.

6.5 Off the Track Line

During the movement, the robot is not allowed to deviate from the track line of the flight path (that is, the robot's driving wheels must touch or be on both sides of the black line, and must pass through all track lines along the way). If the robot completely deviates from the black line, it must be reset.

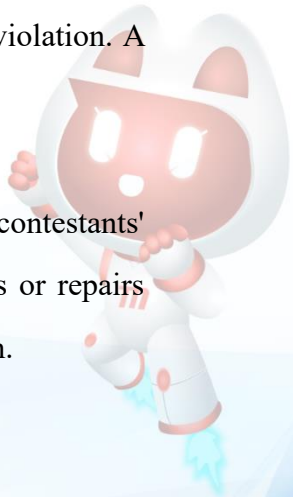
For completing tasks other than the "Event Horizon Exploration" task, the robot can temporarily deviate from the track line but must return to the original deviated location before continuing to drive.

Section 7. Violations

7.1 Each team is allowed to "false start" the robot once in each round of the mission. If the second "false start" occurs in the group stage, the score for that round will be 0 points, and in the finals, the team will be eliminated directly.

7.2 After the game begins, if a contestant touches objects or robots on the field without the referee's permission, they will receive a warning for the first violation. A second violation will result in a score of 0 points.

7.3 If a coach or parent provides verbal instructions that influence the contestants' performance, personally participates in building or debugging, or touches or repairs the work, the score for that round will be recorded as zero upon verification.



7.4 After starting, the robot shall not deliberately separate parts or drop parts on the field for strategic needs. If the robot does this, it will be considered as a foul and a warning will be given as determined by the referee. If the violation occurs again, the score for this round will be 0 points. Parts that are separated or dropped due to foul play will be cleared immediately by the referee.

7.5 If a contestant fails to follow the referee's instructions, the referee will assess the severity of the situation and take appropriate action. The contestant may receive a warning, a score of 0 in the preliminary round, elimination from the final, or even disqualification from the event.

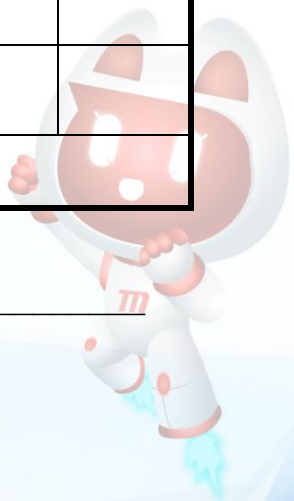
Appendix 1.

Score Sheet for the Interstellar Legend (Elementary Mission)

Team:_____ **Group:** _____

Fixed tasks				
Tasks		**Points**	**Round 1**	**Round 2**
Automatic Period (10 secs)	**Smooth Departure**	The robot leaves the Starship Dock, and 60 points will be scored.		
	Starship Navigation	If the operation sign of the control center lights up, 60 points will be scored.		
Remote-control Period (110 secs)	**Space-time Distortion**	If at least one of the robot's driving wheels passes, 60 points will be scored.		
	Event Horizon Exploration (The highest scoring position is calculated, and a single detector can receive up to 40 points)	When one detector leaves the initial placement, 10 points will be scored.		
		If the detector touches the apparent boundaries of the black hole, 10 points will be added for each.		
		If the detector touches the event horizon of the black hole, 20 points will be added for each.		
		If the detector touches the center of the black hole, 30 points will be added for each.		
	Interstellar Scientific Research (Additional task)	If the limiter is engaged, 10 points will be scored.		
		If the corresponding constellation is pushed down to a horizontal state, 50 points will be scored.		
	Safe Return	The robot's driving wheels are fully integrated into the starship dock and display "√", 60 points will be scored.		
Total Score for All Tasks				
Smoothness Score		The initial score is 50 points, and 5 points will be deducted for each reset.		
Task Completion Score (≤120 seconds, recorded to one decimal place, eg.110.1s)				
Time Score (refer to the requirements of "4.5 Time score" about the remaining time range)				
Single-round score (= Task Completion Score + Smoothness Score+ Time Score)				
Final score (i.e. the highest single-round score)				

Referee: _____ **Contestant:** _____



Score Sheet for the Interstellar Legend (Advanced Mission)

Team:_____ **Group:** _____

Fixed tasks				
Tasks		**Points**	**Round 1**	**Round 2**
Basic tasks	**Smooth Departure**	The robot leaves the Starship Dock A, scoring 60 points.		
	Flight Path	For each line where the driving wheel touches the markings, scoring 6 points.		
	Space-time Distortion	The robot enters the area from the entrance and leaves from the exit, scoring 10 points.		
		The robot's driving wheels contact the top surface of the slope and platform, scoring 20 points.		
	Event Horizon Exploration (The highest scoring position is calculated, and a single detector can obtain up to 40 points.)	When one detector leaves the initial placement, 10 points will be scored for each.		
		If the detector touches the apparent boundaries of the black hole, 10 points will be added for each.		
		If the detector touches the event horizon of the black hole, 20 points will be added for each.		
		If the detector touches the center of the black hole, 30 points will be added for each.		
	Starship Navigation	If the control center lights up the operation sign, 60 points will be scored.		
	Safe Return	If the vertical reflection of the driving wheels is within Starship Dock B and displays "√", score 60 points.		
Random tasks	**Hatch Unfolding**	If the spacecraft's top is higher than the hatch and in contact with the platform, score 60 points.		
	Supplies Loading	If the supplies are in contact with the hook but not in contact with the base plate, score 60 points.		
Additional task	**Interstellar Scientific Research**	If the limiter is engaged, 10 points will be scored.		
		If the only correct constellation is pushed down to a horizontal state, 50 points will be scored.		
Total Score for All Tasks				
Smoothness Score		The initial score is 50 points, and 5 points will be deducted for each reset.		
Task Completion Score (≤120 seconds, recorded to one decimal place, eg.110.1s)				
Time Score (refer to the requirements of "4.5 Time score" about the remaining time range)				
Single-round score (= Task Completion Score + Smoothness Score+ Time Score)				
Final score (i.e. the highest single-round score)				

Referee: _____ **Contestant:** _____

Passing states of flight path markers

Round	1	2	3	4	5	6	7	8	9	10
1st										
2nd										