

CoSpace Make Code Challenge Rules 2017

CoSpace Technical Committee

This is the official rules for Make Code Challenge 2016 and is released by the CoSpace Technical Committee. The rules contained in this document have priority over any translations. All teams must read the Make Code Challenge Rules (this document) carefully and understand the requirements and procedures for all aspects of the competition and judging.

PREFACE

In the Make Code Challenge, participants will make and code a smart robot to travel in the smart city in a real-virtual co-existence space. The mission of the Challenge is to look out and provide assistance to people in need of help in the smart city.

The robot starts in the real world. It will notify its virtual team robot after it reaches the teleportation terminal. The virtual robot will then continue the mission in the virtual world. The program code used in the virtual environment can be downloaded into a real robot built by the participants during the Challenge to travel in the real arena.

The Students are required to complete the mission given during the Challenge.

GENERAL RULES

1. AGE GROUP

Age Group	Age as of 1 July 2017
Primary	7 – 12 years old
Secondary	13 – 19 years old

2. TEAM NAME

- 2.1. Each team must have a team name. Each team should designate one member who will act as "captain". In any case, only the team captain is allowed to communicate with the referee.
- 2.2. Teams should report to the registration counter at least 4 minutes before their game starts. Teams that are 4 minutes late for the time of their game will be forfeited from the round.

3. GAME PROCESS

- 3.1. Make Code Challenge program comprises of 2 sub-categories:
 - Robomaker: Presentation+interview
 - Take part in grand Challenge

4. CONFLICT RESOLUTION

- 4.1. During gameplay, the referee's decisions are final.
- 4.2. Rule clarifications may be made by the members of the RoboCup Singapore CoSpace Technical Committee.

5. CODE OF CONDUCT

5.1. Fair Play

- It is expected of all teams to participate fairly.

5.2. Behaviour

- If one team copies a program from another team, both teams will be disqualified.
- Participants should be mindful of others and their robots when moving around the tournament venue.
- Participants who misbehave may be asked to leave the building and risk being disqualified from the tournament.
- These rules will be enforced at the discretion of the referees, officials, tournament organizers and local law enforcement authorities.
- The referees and officials will act alongside the spirit of the event.

5.3. Mentor

- Mentors (teachers, parents, chaperones, translators, and other adult team members) are not allowed to be involved in programming of students' robots.
- Mentor interference with robots or referee decisions will result in a warning in the first instance. If this reoccurs, the team will risk being disqualified.

ROBOMAKER

6. ROBOMAKER DESCRIPTION

- 6.1. In RoboMaker Challenge, each team is required to assemble a robot using a standard RoboMaker kit.
- 6.2. The robot must be identified with a team ID or flag during the competition.
- 6.3. Format
 - (a) The challenge is formed by team presentation and functional test.
 - (b) The same robot must be used for the presentation and functional test. Failure to do so will be subjected to penalization or disqualification for the challenge.
- 6.4. Team setup
 - (a) All teams are allowed to test their robots on the race course during setup only.
 - (b) Teams are allowed to modify the robot design during the setup before the start of the challenge.

7. REAL ARENA

- 7.1. The real arena has a black line with the width of 1.8 cm. The design of the actual racing route will be released on the competition day.
- 7.2. The actual racing route will have additional obstacle and different black line pattern during competition day.

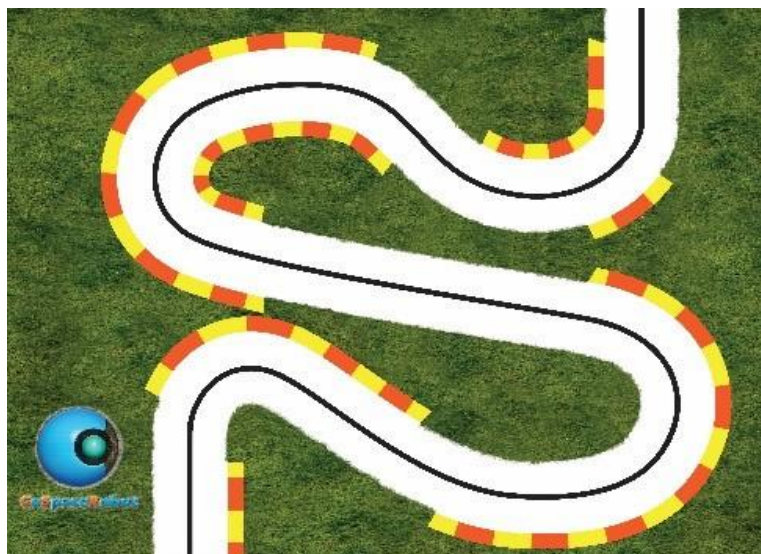


Figure 1: Sample Arena

8. ROBOTS

8.1. Robot assembly

The basic design of the robot consists of a battery holder, a chassis, motors, electronics controllers and sensors. Teams should follow the instruction manual to complete the necessary mechanical mounting and electrical connections.

8.2. Real robot design

- i. Teams are encouraged to add more electronic components, such as controllers, sensors and motors, for aesthetic purposes and for special task (the special task will be given before the competition) only.
- ii. Each robot is encouraged to carry a small flag with a team name and number, which will be given if the robot passes the qualification test.
- iii. Teams are encouraged to design and build their own robot casing. Using any material (E.g. cardboards, 3D printing and paper) to allow the robot to have more aesthetic appeal. Teams are encouraged to have a theme for their robot design. Robot should keep the external design (decoration) during racing competition.

8.3. Size

The robot size (included external designed shield) should not exceed 18cmx18cm (High x Width). There is no restriction of robot length.

8.4. Weight

There is no restriction on the weight, however it is important to note that the weight of the robot will affect the performance of the robot during the real world challenge.

8.5. Programming

(a) Robot must be fully autonomous.

(b) It can be started manually.

(c) Robot must have a reliable program to follow a black line on a bright surface.

(d) Robot must have the ability to

- i. Detect an object in front of it and stop, and the automatically resume when the object in front has cleared.
- ii. Track black line

8.5. Battery

The robot uses AA size batteries. Teams must bring their own batteries for the competition. No batteries will be provided by the organizer.

9. PRESENTATION

9.1. Poster

Teams are required to prepare an A4 poster to share about their team and robot.

9.2. Presentation

Teams are required to present their robot to a panel of judges for duration of 5 minutes. Teams are required to share their robot making learning experience, theme of their robot design, understanding of robots, etc. The robot must pass the functional test such as following the line and obstacle detection.

GRAND CHALLENGE

10. GRAND CHALLENGE DESCRIPTION

In the Grand Challenge, teams are required to present a Robot Race in the real/virtual co-existing space. The robot race begins in the real world, the robot will be teleported to the virtual world at the end of real track. The virtual robot will continue the race in the virtual world to complete the course.

11. VIRTUAL WORLD CHALLENGE

In Virtual World Challenge, teams have to develop appropriate strategies and program the virtual autonomous robot to complete the racetrack as fast as possible within a limited period of time.

- VIRTUAL WORLD

The dimension of the racetrack is about 2.4 m x 3 m. The road is generally white and the width of the black line is about 1.8 cm. The arena may consist of bridges.



- VIRTUAL ROBOTS

Virtual Robots must be controlled autonomously. The use of a remote control to manually control virtual robots is not allowed.

- TEAM NAME

It is mandatory for teams to enter their team name in the CoSpace RoboCoding Simulator. Teams will be disqualified if they fail to do so.

- CHALLENGE PROCESS

Teams should give their program to the referee before game starts. The referee will upload the programs to the CoSpace server, then place the team's robot in the starting point in the virtual world and start the virtual game.

Only one team is to race at one time.

Each trial has a maximum time limit of 4 minutes. If the robot is not able to complete the race within 4 minutes, the race is considered unsuccessful.

- VIRTUAL WORLD SCORING

- i. Scoring of teams will be based on race time.
- ii. If the robot is able to finish the race within 4 minutes, the actual race time will be recorded.
- iii. If the robot fails to complete the race within 4 minutes, the zone that the robot successfully completed and race time will be recorded. The robot performance will be evaluated based on the zone travelled followed by the race time.
- iv. If the robot fails to complete the race within 4 minutes, the zone that the robot successfully completed and race time will be recorded for scoring.
- v. In principle, a game will not be stopped during gameplay. The referee can stop a game when he needs to discuss an issue/problem with the OC/TC. The game will be called "time-out" in this case.

12. REAL WORLD CHALLENGE

12.1. Teams will be given 1 minute preparation time before the start of the race.

12.2. The robot will start within the area designated before the starting line in the real field. The CLOCK will only start when the robot passes the starting line in the real field and end when the robot passes the finishing line in the virtual racetrack.

12.3. Team needs to program both real and virtual robots.

12.4. Only one team is to race at one time.

MAKE CODE CHALLENGE JUDGE CRITERIA:



Singapore National CoSpace and RoboMaker Challenges 2016

School Name	
Team Name	
Date	

Scoring Category	Scope	Points
Presentation	Presentation Consistency (Voice level, pace, clarity, etc)	/5
	Content Knowledge (Able to show sufficient understanding in the topics presented)	/5
	Robot Design (Aesthetic, innovative, choice of material, adequate support)	/5
	Question & Answers	/5



Scoring Category	Scope	Points
Qualification Test	Robot design is within the specification (Maximum Height = 18cm, Width = 18cm)	/5
	Robot is able to follow line	/5
	Robot is able detect front object	/5

Scoring Category	Racing	Complete Track Time ¹	Real Zone (W)					Virtual Zone (X)					Score (W+X)	Rank	Rank Point ³ (Y)	Task (Z)		Point (Y+Z)	Total Point
			A (10 pt)	B (20 pt)	C (30 pt)	D (40 pt)	Goal (50 pt)	A (5 pt)	B (10 pt)	C (15 pt)	D (20 pt)	Goal (30 pt)				1 (20 pt)	2 (20 pt)		
			Robot Racing	Run - 1st															
	Run - 2nd																		
	Run - 3rd																		

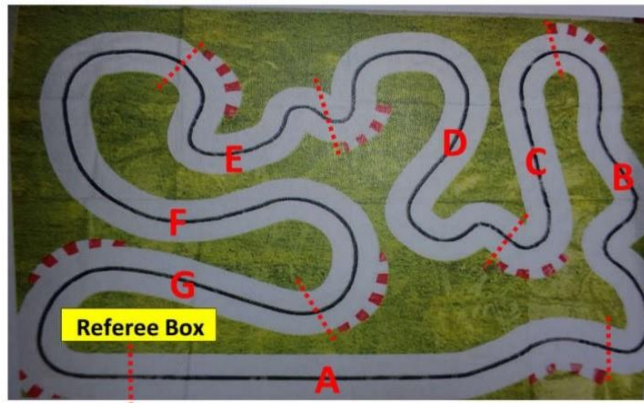
Total Points

Remark:

¹ Robot must completed racing time within 8 minutes. Record robot complete running time then rank based on overall score.

² Mark if robot stop at certain zone area (For robot unable to complete the whole track run).

³ Rank : Rank 1 = 70, Rank 2 = 65, Rank 3 = 60, Rank 4 = 55, Rank 5 = 50, Rank 6 = 45, Rank 7 = 40, Rank 8 = 35, Rank 9 = 30, Rank 10 = 25 subsequently.



Presentation
Judge's Signature:

Racing
Judge's Signature:

Team Member
Signature:

Name : _____

Name : _____

Name : _____

In case of tie results, the Chief Judge may ask the involved teams to race again.

It is not whether you win or lose, but how much you learn that counts!

Please contact Competition@CoSpaceRobot.org should you have any questions.